



11/19/15

Technical Report for

Stantec Consulting Services Inc.

Sunoco - Marcus Hook Facility, PA

MHIC 523 Tank

Accutest Job Number: JC7897

Sampling Date: 11/05/15



Report to:

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Total number of pages in report: 318



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.

A handwritten signature in black ink that reads "Nancy T. Cole".

**Nancy Cole
Laboratory Director**

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Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TN, TX, VA, WV, DoD ELAP (L-A-B L2248)

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Test results relate only to samples analyzed.

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Sample Summary

Stantec Consulting Services Inc.

Job No: JC7897

Sunoco - Marcus Hook Facility, PA
Project No: MHIC 523 Tank

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
JC7897-1	11/05/15	08:35 JD	11/05/15	SO	Soil	MH523-11-5.0-20151105
JC7897-2	11/05/15	08:45 JD	11/05/15	SO	Soil	MH523-12-5.0-20151105
JC7897-3	11/05/15	09:05 JD	11/05/15	SO	Soil	MH523-13-5.0-20151105

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Stantec Consulting Services Inc.

Job No JC7897

Site: Sunoco - Marcus Hook Facility, PA

Report Date 11/19/2015 1:15:48 P

On 11/05/2015, 3 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JC7897 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: SO

Batch ID: VD9625

- All samples were analyzed within the recommended method holding time.
- Sample(s) JC7897-3MS, JC7897-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- VD9625-MB for 1,2-Dichloroethane: MDL from current instrument.

Matrix: SO

Batch ID: VV6649

- All samples were analyzed within the recommended method holding time.
- Sample(s) JC8031-3DUP, JC8038-12MS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO

Batch ID: VX6848

- All samples were analyzed within the recommended method holding time.
- Sample(s) JC5549-1AMS, JC5549-1AMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GCMS By Method SW846 8270D

Matrix: SO

Batch ID: OP88822

- All samples were extracted within the recommended method holding time.
- Sample(s) JC7769-1MS, JC7769-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 2-Methylnaphthalene, Acenaphthene, Fluorene, Naphthalene are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Acenaphthene, Fluorene, Naphthalene are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike/Matrix Spike Duplicate Recovery(s) for Fluoranthene, Pyrene,, Phenanthrene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- RPD(s) for MSD for 2,4-Dinitrophenol are outside control limits. Analytical precision exceeds in-house control limits.
- JC7897-2: Confirmation run.
- JC7897-1: Dilution required due to matrix interference.
- JC7897-3: Dilution required due to matrix interference.

Volatiles by GC By Method SW846 8011

Matrix: SO

Batch ID: M:GBB3513

- The data for SW846 8011 meets quality control requirements.
- JC7897-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JC7897-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JC7897-3: Analysis performed at Accutest Laboratories, Marlborough, MA.

Metals By Method SW846 6010C

Matrix: SO

Batch ID: MP90213

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC8072-16MS, JC8072-16MSD, JC8072-16SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Cobalt are outside control limits. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Wet Chemistry By Method SM2540 G-97

Matrix: SO

Batch ID: GN35781

- The data for SM2540 G-97 meets quality control requirements.

Matrix: SO

Batch ID: GN35782

- The data for SM2540 G-97 meets quality control requirements.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest New Jersey

Job No JC7897

Site: SECORPAE: Marcus Hook Industrial Complex

Report Date 11/19/2015 9:18:49 AM

3 Sample(s) were collected on 11/05/2015 and were received at Accutest on 11/05/2015 properly preserved, at 5 Deg. C and intact. These Samples received an Accutest job number of JC7897. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GC By Method SW846 8011

Matrix: SO

Batch ID: OP45402

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC7895-1MS, JC7895-1MSD were used as the QC samples indicated.
- Continuing calibration check standard GBB3513-ECC3513, signal #1 for 1,2-Dibromoethane exceeded 15% Dev. 1,2-Dibromoethane was reported from signal #2.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(JC7897).

Summary of Hits

Job Number: JC7897

Account: Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Collected: 11/05/15

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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JC7897-1 MH523-11-5.0-20151105

Benzene	0.0035	0.00050	0.00013	mg/kg	SW846 8260C
Toluene	0.00089 J	0.00099	0.00021	mg/kg	SW846 8260C
Ethylbenzene	0.0012	0.00099	0.00016	mg/kg	SW846 8260C
Xylene (total)	0.0014	0.00099	0.00027	mg/kg	SW846 8260C
sec-Butylbenzene	0.0011 J	0.0020	0.00017	mg/kg	SW846 8260C
tert-Butylbenzene	0.00095 J	0.0020	0.00021	mg/kg	SW846 8260C
Cyclohexane	0.0161	0.0020	0.00031	mg/kg	SW846 8260C
Hexane	0.0425	0.0050	0.00038	mg/kg	SW846 8260C
Isopropylbenzene	0.0022	0.0020	0.00011	mg/kg	SW846 8260C
Naphthalene	0.0108	0.0050	0.00019	mg/kg	SW846 8260C
1,2,4-Trimethylbenzene	0.00026 J	0.0020	0.00020	mg/kg	SW846 8260C
Acenaphthene ^a	0.146	0.082	0.077	mg/kg	SW846 8270D
Anthracene ^a	0.119	0.082	0.0071	mg/kg	SW846 8270D
Benzo(a)anthracene ^a	0.0856	0.082	0.016	mg/kg	SW846 8270D
Benzo(a)pyrene ^a	0.0623 J	0.082	0.017	mg/kg	SW846 8270D
Benzo(b)fluoranthene ^a	0.0677 J	0.082	0.017	mg/kg	SW846 8270D
Benzo(g,h,i)perylene ^a	0.0455 J	0.082	0.025	mg/kg	SW846 8270D
Chrysene ^a	0.122	0.082	0.013	mg/kg	SW846 8270D
Fluoranthene ^a	0.112	0.082	0.010	mg/kg	SW846 8270D
Fluorene ^a	0.290	0.082	0.0097	mg/kg	SW846 8270D
2-Methylnaphthalene ^a	2.24	0.16	0.015	mg/kg	SW846 8270D
Naphthalene ^a	0.188	0.082	0.013	mg/kg	SW846 8270D
Phenanthrene ^a	0.504	0.082	0.0091	mg/kg	SW846 8270D
Pyrene ^a	0.181	0.082	0.010	mg/kg	SW846 8270D
Cobalt	8.1	6.2	0.049	mg/kg	SW846 6010C
Lead	23.1	2.5	0.29	mg/kg	SW846 6010C
Nickel	13.9	4.9	0.12	mg/kg	SW846 6010C
Vanadium	27.5	6.2	0.092	mg/kg	SW846 6010C
Zinc	38.0	6.2	0.95	mg/kg	SW846 6010C

JC7897-2 MH523-12-5.0-20151105

Acenaphthene	0.0738	0.037	0.035	mg/kg	SW846 8270D
Anthracene	0.118	0.037	0.0032	mg/kg	SW846 8270D
Benzo(a)anthracene	0.127	0.037	0.0071	mg/kg	SW846 8270D
Benzo(a)pyrene	0.121	0.037	0.0078	mg/kg	SW846 8270D
Benzo(b)fluoranthene	0.108	0.037	0.0076	mg/kg	SW846 8270D
Benzo(g,h,i)perylene	0.0664	0.037	0.011	mg/kg	SW846 8270D
Benzo(k)fluoranthene	0.0367 J	0.037	0.0082	mg/kg	SW846 8270D
Chrysene	0.135	0.037	0.0059	mg/kg	SW846 8270D
Dibeno(a,h)anthracene	0.0425	0.037	0.013	mg/kg	SW846 8270D
Fluoranthene	0.263	0.037	0.0045	mg/kg	SW846 8270D
Fluorene	0.0724	0.037	0.0044	mg/kg	SW846 8270D

Summary of Hits

Page 2 of 2

Job Number: JC7897

Account: Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Collected: 11/05/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Indeno(1,2,3-cd)pyrene		0.0271 J	0.037	0.019	mg/kg	SW846 8270D
2-Methylnaphthalene		0.0487 J	0.074	0.0069	mg/kg	SW846 8270D
Naphthalene		0.0418	0.037	0.0059	mg/kg	SW846 8270D
Phenanthrene		0.444	0.037	0.0041	mg/kg	SW846 8270D
Pyrene		0.288	0.037	0.0046	mg/kg	SW846 8270D
Cobalt		7.2	5.6	0.045	mg/kg	SW846 6010C
Lead		10.9	2.2	0.27	mg/kg	SW846 6010C
Nickel		15.1	4.5	0.11	mg/kg	SW846 6010C
Vanadium		44.2	5.6	0.084	mg/kg	SW846 6010C
Zinc		38.5	5.6	0.86	mg/kg	SW846 6010C

JC7897-3 MH523-13-5.0-20151105

Benzene		0.0241 J	0.058	0.015	mg/kg	SW846 8260C
Xylene (total)		0.0661 J	0.12	0.032	mg/kg	SW846 8260C
Isopropylbenzene		0.0271 J	0.23	0.012	mg/kg	SW846 8260C
Naphthalene		0.834	0.58	0.022	mg/kg	SW846 8260C
1,2,4-Trimethylbenzene		0.106 J	0.23	0.023	mg/kg	SW846 8260C
1,3,5-Trimethylbenzene		0.273	0.23	0.022	mg/kg	SW846 8260C
Acenaphthene ^a		0.321	0.079	0.075	mg/kg	SW846 8270D
Anthracene ^a		0.155	0.079	0.0068	mg/kg	SW846 8270D
Benzo(a)anthracene ^a		0.0723 J	0.079	0.015	mg/kg	SW846 8270D
Benzo(b)fluoranthene ^a		0.0397 J	0.079	0.016	mg/kg	SW846 8270D
Benzo(g,h,i)perylene ^a		0.0558 J	0.079	0.024	mg/kg	SW846 8270D
1,1'-Biphenyl ^a		0.0892 J	0.16	0.015	mg/kg	SW846 8270D
Chrysene ^a		0.126	0.079	0.013	mg/kg	SW846 8270D
Fluoranthene ^a		0.0726 J	0.079	0.0097	mg/kg	SW846 8270D
Fluorene ^a		0.393	0.079	0.0094	mg/kg	SW846 8270D
2-Methylnaphthalene ^a		1.60	0.16	0.015	mg/kg	SW846 8270D
Naphthalene ^a		0.534	0.079	0.013	mg/kg	SW846 8270D
Phenanthrene ^a		0.447	0.079	0.0088	mg/kg	SW846 8270D
Pyrene ^a		0.783	0.079	0.0099	mg/kg	SW846 8270D
Cobalt		7.3	6.3	0.051	mg/kg	SW846 6010C
Lead		14.2	2.5	0.30	mg/kg	SW846 6010C
Nickel		16.4	5.1	0.12	mg/kg	SW846 6010C
Vanadium		40.7	6.3	0.095	mg/kg	SW846 6010C
Zinc		40.6	6.3	0.97	mg/kg	SW846 6010C

(a) Dilution required due to matrix interference.



4

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID: MH523-11-5.0-20151105

Lab Sample ID: JC7897-1

Date Sampled: 11/05/15

Matrix: SO - Soil

Date Received: 11/05/15

Method: SW846 8260C

Percent Solids: 81.1

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X159519.D	1	11/07/15	PR	n/a	n/a	VX6848
Run #2							

Initial Weight

Run #1 6.2 g

Run #2

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0035	0.00050	0.00013	mg/kg	
108-88-3	Toluene	0.00089	0.00099	0.00021	mg/kg	J
100-41-4	Ethylbenzene	0.0012	0.00099	0.00016	mg/kg	
1330-20-7	Xylene (total)	0.0014	0.00099	0.00027	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00099	0.00015	mg/kg	
135-98-8	sec-Butylbenzene	0.0011	0.0020	0.00017	mg/kg	J
98-06-6	tert-Butylbenzene	0.00095	0.0020	0.00021	mg/kg	J
110-82-7	Cyclohexane	0.0161	0.0020	0.00031	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00099	0.00013	mg/kg	
110-54-3	Hexane	0.0425	0.0050	0.00038	mg/kg	
98-82-8	Isopropylbenzene	0.0022	0.0020	0.00011	mg/kg	
91-20-3	Naphthalene	0.0108	0.0050	0.00019	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00026	0.0020	0.00020	mg/kg	J
108-67-8	1,3,5-Trimethylbenzene	ND	0.0020	0.00019	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		70-122%
17060-07-0	1,2-Dichloroethane-D4	120%		68-124%
2037-26-5	Toluene-D8	102%		77-125%
460-00-4	4-Bromofluorobenzene	105%		72-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 2

Client Sample ID: MH523-11-5.0-20151105

Lab Sample ID: JC7897-1

Date Sampled: 11/05/15

Matrix: SO - Soil

Date Received: 11/05/15

Method: SW846 8270D SW846 3546

Percent Solids: 81.1

Project: Sunoco - Marcus Hook Facility, PA

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	5P23390.D	2	11/19/15	SD	11/10/15	OP88822	E5P1190

Run #1	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.41	0.15	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.41	0.36	mg/kg	
95-48-7	2-Methylphenol	ND	0.16	0.12	mg/kg	
	3&4-Methylphenol	ND	0.16	0.078	mg/kg	
100-02-7	4-Nitrophenol	ND	0.82	0.14	mg/kg	
108-95-2	Phenol	ND	0.16	0.061	mg/kg	
83-32-9	Acenaphthene	0.146	0.082	0.077	mg/kg	
120-12-7	Anthracene	0.119	0.082	0.0071	mg/kg	
56-55-3	Benzo(a)anthracene	0.0856	0.082	0.016	mg/kg	
50-32-8	Benzo(a)pyrene	0.0623	0.082	0.017	mg/kg	J
205-99-2	Benzo(b)fluoranthene	0.0677	0.082	0.017	mg/kg	J
191-24-2	Benzo(g,h,i)perylene	0.0455	0.082	0.025	mg/kg	J
207-08-9	Benzo(k)fluoranthene	ND	0.082	0.018	mg/kg	
92-52-4	1,1'-Biphenyl	ND	0.16	0.015	mg/kg	
218-01-9	Chrysene	0.122	0.082	0.013	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.082	0.029	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.16	0.0097	mg/kg	
84-66-2	Diethyl phthalate	ND	0.16	0.010	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.16	0.029	mg/kg	
206-44-0	Fluoranthene	0.112	0.082	0.010	mg/kg	
86-73-7	Fluorene	0.290	0.082	0.0097	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.082	0.042	mg/kg	
91-57-6	2-Methylnaphthalene	2.24	0.16	0.015	mg/kg	
91-20-3	Naphthalene	0.188	0.082	0.013	mg/kg	
85-01-8	Phenanthrene	0.504	0.082	0.0091	mg/kg	
129-00-0	Pyrene	0.181	0.082	0.010	mg/kg	
110-86-1	Pyridine	ND	0.16	0.041	mg/kg	
91-22-5	Quinoline	ND	0.41	0.030	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		30-106%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH523-11-5.0-20151105	Date Sampled:	11/05/15
Lab Sample ID:	JC7897-1	Date Received:	11/05/15
Matrix:	SO - Soil		
Method:	SW846 8270D SW846 3546		
Project:	Sunoco - Marcus Hook Facility, PA	Percent Solids:	81.1

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	68%		30-106%
118-79-6	2,4,6-Tribromophenol	74%		24-140%
4165-60-0	Nitrobenzene-d5	86%		26-122%
321-60-8	2-Fluorobiphenyl	87%		36-112%
1718-51-0	Terphenyl-d14	86%		36-132%

(a) Dilution required due to matrix interference.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID: MH523-11-5.0-20151105

Lab Sample ID: JC7897-1

Date Sampled: 11/05/15

Matrix: SO - Soil

Date Received: 11/05/15

Method: SW846 8011 SW846 3550B

Percent Solids: 81.1

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BB65165.D	1	11/13/15	AMA	11/13/15	M:OP45402	M:GBB3513
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0030	0.00050	mg/kg	
<hr/>						
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	133%		70-170%		
460-00-4	Bromofluorobenzene (S)	119%		70-170%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH523-11-5.0-20151105	Date Sampled:	11/05/15
Lab Sample ID:	JC7897-1	Date Received:	11/05/15
Matrix:	SO - Soil	Percent Solids:	81.1
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	8.1	6.2	0.049	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Lead	23.1	2.5	0.29	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Nickel	13.9	4.9	0.12	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Vanadium	27.5	6.2	0.092	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Zinc	38.0	6.2	0.95	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹

(1) Instrument QC Batch: MA38018

(2) Prep QC Batch: MP90213

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Page 1 of 1

4.2
4

Client Sample ID: MH523-12-5.0-20151105

Lab Sample ID: JC7897-2

Date Sampled: 11/05/15

Matrix: SO - Soil

Date Received: 11/05/15

Method: SW846 8260C

Percent Solids: 85.2

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V157428.D	1	11/10/15	PR	n/a	n/a	VV6649
Run #2							

Initial Weight

Run #1 6.4 g

Run #2

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.00046	0.00012	mg/kg	
108-88-3	Toluene	ND	0.00092	0.00019	mg/kg	
100-41-4	Ethylbenzene	ND	0.00092	0.00015	mg/kg	
1330-20-7	Xylene (total)	ND	0.00092	0.00025	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00092	0.00014	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0018	0.00016	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0018	0.00019	mg/kg	
110-82-7	Cyclohexane	ND	0.0018	0.00029	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00092	0.00012	mg/kg	
110-54-3	Hexane	ND	0.0046	0.00035	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0018	0.000097	mg/kg	
91-20-3	Naphthalene	ND	0.0046	0.00017	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0018	0.00018	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0018	0.00018	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-122%
17060-07-0	1,2-Dichloroethane-D4	90%		68-124%
2037-26-5	Toluene-D8	101%		77-125%
460-00-4	4-Bromofluorobenzene	101%		72-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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4

Client Sample ID: MH523-12-5.0-20151105
Lab Sample ID: JC7897-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 11/05/15
Date Received: 11/05/15
Percent Solids: 85.2

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z106084.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295
Run #2 ^a	5P23388.D	2	11/19/15	SD	11/10/15	OP88822	E5P1190

	Initial Weight	Final Volume
Run #1	31.9 g	1.0 ml
Run #2	31.9 g	1.0 ml

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.18	0.067	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.18	0.16	mg/kg	
95-48-7	2-Methylphenol	ND	0.074	0.053	mg/kg	
	3&4-Methylphenol	ND	0.074	0.035	mg/kg	
100-02-7	4-Nitrophenol	ND	0.37	0.063	mg/kg	
108-95-2	Phenol	ND	0.074	0.028	mg/kg	
83-32-9	Acenaphthene	0.0738	0.037	0.035	mg/kg	
120-12-7	Anthracene	0.118	0.037	0.0032	mg/kg	
56-55-3	Benzo(a)anthracene	0.127	0.037	0.0071	mg/kg	
50-32-8	Benzo(a)pyrene	0.121	0.037	0.0078	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.108	0.037	0.0076	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.0664	0.037	0.011	mg/kg	
207-08-9	Benzo(k)fluoranthene	0.0367	0.037	0.0082	mg/kg	J
92-52-4	1,1'-Biphenyl	ND	0.074	0.0068	mg/kg	
218-01-9	Chrysene	0.135	0.037	0.0059	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	0.0425	0.037	0.013	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.074	0.0043	mg/kg	
84-66-2	Diethyl phthalate	ND	0.074	0.0047	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.074	0.013	mg/kg	
206-44-0	Fluoranthene	0.263	0.037	0.0045	mg/kg	
86-73-7	Fluorene	0.0724	0.037	0.0044	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0271	0.037	0.019	mg/kg	J
91-57-6	2-Methylnaphthalene	0.0487	0.074	0.0069	mg/kg	J
91-20-3	Naphthalene	0.0418	0.037	0.0059	mg/kg	
85-01-8	Phenanthrene	0.444	0.037	0.0041	mg/kg	
129-00-0	Pyrene	0.288	0.037	0.0046	mg/kg	
110-86-1	Pyridine	ND	0.074	0.018	mg/kg	
91-22-5	Quinoline	ND	0.18	0.013	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%	56%	30-106%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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4.2
4

Client Sample ID:	MH523-12-5.0-20151105	Date Sampled:	11/05/15
Lab Sample ID:	JC7897-2	Date Received:	11/05/15
Matrix:	SO - Soil	Percent Solids:	85.2
Method:	SW846 8270D SW846 3546		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	47%	61%	30-106%
118-79-6	2,4,6-Tribromophenol	89%	81%	24-140%
4165-60-0	Nitrobenzene-d5	51%	66%	26-122%
321-60-8	2-Fluorobiphenyl	75%	88%	36-112%
1718-51-0	Terphenyl-d14	84%	92%	36-132%

(a) Confirmation run.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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4.2
4

Client Sample ID: MH523-12-5.0-20151105
Lab Sample ID: JC7897-2
Matrix: SO - Soil
Method: SW846 8011 SW846 3550B
Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 11/05/15
 Date Received: 11/05/15
 Percent Solids: 85.2

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BB65166.D	1	11/14/15	AMA	11/13/15	M:OP45402	M:GBB3513
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0029	0.00048	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	129%		70-170%		
460-00-4	Bromofluorobenzene (S)	112%		70-170%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: MH523-12-5.0-20151105
Lab Sample ID: JC7897-2
Matrix: SO - Soil
Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 11/05/15
Date Received: 11/05/15
Percent Solids: 85.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	7.2	5.6	0.045	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Lead	10.9	2.2	0.27	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Nickel	15.1	4.5	0.11	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Vanadium	44.2	5.6	0.084	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Zinc	38.5	5.6	0.86	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹

(1) Instrument QC Batch: MA38018

(2) Prep QC Batch: MP90213

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

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4.3
4

Client Sample ID: MH523-13-5.0-20151105

Lab Sample ID: JC7897-3

Date Sampled: 11/05/15

Matrix: SO - Soil

Date Received: 11/05/15

Method: SW846 8260C

Percent Solids: 80.5

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D235765.D	1	11/12/15	BM	n/a	n/a	VD9625
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.0 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0241	0.058	0.015	mg/kg	J
108-88-3	Toluene	ND	0.12	0.024	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.019	mg/kg	
1330-20-7	Xylene (total)	0.0661	0.12	0.032	mg/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	0.12	0.018	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.23	0.020	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.23	0.024	mg/kg	
110-82-7	Cyclohexane	ND	0.23	0.037	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.12	0.015	mg/kg	
110-54-3	Hexane	ND	0.58	0.045	mg/kg	
98-82-8	Isopropylbenzene	0.0271	0.23	0.012	mg/kg	J
91-20-3	Naphthalene	0.834	0.58	0.022	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.106	0.23	0.023	mg/kg	J
108-67-8	1,3,5-Trimethylbenzene	0.273	0.23	0.022	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		70-122%
17060-07-0	1,2-Dichloroethane-D4	98%		68-124%
2037-26-5	Toluene-D8	102%		77-125%
460-00-4	4-Bromofluorobenzene	101%		72-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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4.3
4

Client Sample ID:	MH523-13-5.0-20151105	Date Sampled:	11/05/15
Lab Sample ID:	JC7897-3	Date Received:	11/05/15
Matrix:	SO - Soil	Percent Solids:	80.5
Method:	SW846 8270D SW846 3546		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P23389.D	2	11/19/15	SD	11/10/15	OP88822	E5P1190

Initial Weight	Final Volume
Run #1 31.4 g	1.0 ml
Run #2	

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.40	0.14	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.40	0.35	mg/kg	
95-48-7	2-Methylphenol	ND	0.16	0.11	mg/kg	
	3&4-Methylphenol	ND	0.16	0.076	mg/kg	
100-02-7	4-Nitrophenol	ND	0.79	0.13	mg/kg	
108-95-2	Phenol	ND	0.16	0.059	mg/kg	
83-32-9	Acenaphthene	0.321	0.079	0.075	mg/kg	
120-12-7	Anthracene	0.155	0.079	0.0068	mg/kg	
56-55-3	Benzo(a)anthracene	0.0723	0.079	0.015	mg/kg	J
50-32-8	Benzo(a)pyrene	ND	0.079	0.017	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0397	0.079	0.016	mg/kg	J
191-24-2	Benzo(g,h,i)perylene	0.0558	0.079	0.024	mg/kg	J
207-08-9	Benzo(k)fluoranthene	ND	0.079	0.018	mg/kg	
92-52-4	1,1'-Biphenyl	0.0892	0.16	0.015	mg/kg	J
218-01-9	Chrysene	0.126	0.079	0.013	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.079	0.028	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.16	0.0093	mg/kg	
84-66-2	Diethyl phthalate	ND	0.16	0.010	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.16	0.028	mg/kg	
206-44-0	Fluoranthene	0.0726	0.079	0.0097	mg/kg	J
86-73-7	Fluorene	0.393	0.079	0.0094	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.079	0.041	mg/kg	
91-57-6	2-Methylnaphthalene	1.60	0.16	0.015	mg/kg	
91-20-3	Naphthalene	0.534	0.079	0.013	mg/kg	
85-01-8	Phenanthrene	0.447	0.079	0.0088	mg/kg	
129-00-0	Pyrene	0.783	0.079	0.0099	mg/kg	
110-86-1	Pyridine	ND	0.16	0.040	mg/kg	
91-22-5	Quinoline	ND	0.40	0.029	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		30-106%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH523-13-5.0-20151105	Date Sampled:	11/05/15
Lab Sample ID:	JC7897-3	Date Received:	11/05/15
Matrix:	SO - Soil	Percent Solids:	80.5
Method:	SW846 8270D SW846 3546		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	78%		30-106%
118-79-6	2,4,6-Tribromophenol	85%		24-140%
4165-60-0	Nitrobenzene-d5	86%		26-122%
321-60-8	2-Fluorobiphenyl	94%		36-112%
1718-51-0	Terphenyl-d14	95%		36-132%

(a) Dilution required due to matrix interference.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID: MH523-13-5.0-20151105
Lab Sample ID: JC7897-3
Matrix: SO - Soil
Method: SW846 8011 SW846 3550B
Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 11/05/15
 Date Received: 11/05/15
 Percent Solids: 80.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BB65167.D	1	11/14/15	AMA	11/13/15	M:OP45402	M:GBB3513
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0030	0.00051	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	125%		70-170%		
460-00-4	Bromofluorobenzene (S)	103%		70-170%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: MH523-13-5.0-20151105
Lab Sample ID: JC7897-3
Matrix: SO - Soil
Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 11/05/15
Date Received: 11/05/15
Percent Solids: 80.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	7.3	6.3	0.051	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Lead	14.2	2.5	0.30	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Nickel	16.4	5.1	0.12	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Vanadium	40.7	6.3	0.095	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹
Zinc	40.6	6.3	0.97	mg/kg	1	11/10/15	11/11/15	ND	SW846 6010C ¹

(1) Instrument QC Batch: MA38018

(2) Prep QC Batch: MP90213

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL



Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



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CHAIN OF CUSTODY

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2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

Client / Reporting Information		Project Information		FED-EX Tracking #		Bottle Order Control #											
				Accutest Quote #		Accutest Job #											
Company Name Startec		Project Name: Marcus Hook Industrial Complex 523 Tank				JC7897											
Street Address 1060 Andrew Drive		Street															
City West Chester	State PA	City	State	Billing Information (if different from Report to)													
Project Contact Jennifer.Menges@startec.com	E-mail	Project #		Company Name													
Phone # 610-840-2500	Fax # 610-840-2501	Client Purchase Order #		Street Address													
Sample(s) Name(s) Jenny DeBoer	Phone #	Project Manager		City		State	Zip										
Attention:																	
Collection				Number of preserved Bottles													
Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	None	DI Water	NEOH	ENCORE		
1	MHS23-11-5.0-20151105	11/15/2015	0835	JD	SD	6				3	2	1	X	X	X	X	
2	MHS23-12-5.0-20151105	11/15/2015	0845	JD	SD	6				3	2	1	X	X	X	X	
3	MHS23-13-5.0-20151105	11/15/2015	0905	JD	SD	6				3	2	1	X	X	X	X	
Turnaround Time (Business days)																	
Approved By (Accutest PM): / Date: INITIAL ASSESSMENT ZJM				Data Deliverable Information												Comments / Special Instructions	
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day RUSH <input type="checkbox"/> other _____				<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ Data of Known Quality Protocol Reporting		<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format EQUIS <input type="checkbox"/> Other _____								# See attached "Comprehensive coc list for Evergreen characterizations" for analytes			
Emergency & Rush T/A data available VIA LabLink				Commercial "A" = Results Only, Commercial "B" = QC Summary + Partial Raw data NJ Reduced = Results + QC Summary + Partial Raw data													
Relinquished by Sampler: 1		Date Time: 11/15/15 1700	Received By: 1	Relinquished by: 2		Date Time: 11/15/15	Received By: 2	Relinquished by: 3		Date Time: 11/15/15	Received By: 3	Relinquished by: 4		Date Time: 11/15/15	Received By: 4	Preserved where applicable <input type="checkbox"/> intact <input type="checkbox"/> Not intact	
Relinquished by Sampler: 3		Date Time: 11/15/15	Received By: 3	Relinquished by: 4		Date Time: 11/15/15	Received By: 4	Relinquished by: 5		Date Time: 11/15/15	Received By: 5	Custody Seal #		<input type="checkbox"/> On Ice	<input type="checkbox"/> Cooler Temp.		

JC7897: Chain of Custody

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Comprehensive COC List for Evergreen Characterizations (August 2015)

VOCs by EPA Method 8260	CAS No.	SVOCs by EPA Method 8270	CAS No.
Benzene	71-43-2	Aceanthrene	83-32-9
Butylbenzene, sec-	135-98-8	Anthracene	120-12-7
Butylbenzene, tert-	98-06-6	Benz[a]anthracene	56-55-3
Cumene	98-82-8	Benz[a]pyrene	50-32-8
Cyclohexane	110-82-7	Benz[b]fluoranthene	205-99-2
Dichloroethane, 1,2-	107-06-2	Benz[g,h,i]perylene	191-24-2
Ethylbenzene	100-41-4	Benz[k]fluoranthene	207-08-9
Ethylene Dibromide*	106-93-4	Biphenyl, 1,1-	92-52-4
Hexane	110-54-3	Bis[2(ethylhexyl) phthalate	117-81-7
Methyl tert butyl ether	1634-04-4	Chrysene	218-01-9
Toluene	108-88-3	Cresol, m- (3-methylphenol)	108-39-4
Trimethylbenzene, 1,2,4-	95-63-6	Cresol, o- (2-methylphenol)	95-48-7
Trimethylbenzene, 1,3,5-	108-67-8	Cresol, p- (4-methylphenol)	106-44-5
Xylenes	1330-20-7	Dibenz[a,h]anthracene	53-70-3
		Diethyl phthalate	84-66-2
		Dimethylphenol, 2,4-	105-67-9
		Dimethylphenol, 2,6-	84-74-2
		Dinitrophenol, 2,4-	51-28-5
		Fluoranthene	206-44-0
		Fluorene	86-73-7
Metals by Method 6010/6020	CAS No.	Indeno[1,2,3-cd]pyrene	193-39-5
Cobalt ***	7440-48-4	Methylaphthalene, 2-	91-57-6
Lead***	7439-92-1	Naphthalene**	91-20-3
Nickel***	7440-02-0	Nitrophenol, 4-	100-02-7
Vanadium***	7440-62-2	Phenanthrene	85-01-8
ZnC***	7440-66-6	Phenol	108-95-2
		Pyrene	129-00-0
		Pyridine	110-38-1
		Quinoline	91-22-5

*Ethylene Dibromide should be analyzed by EPA Method 8011 instead of 8260 in soil for tank investigations and in all groundwater samples.

**Naphthalene should be analyzed by EPA Method 8260 instead of 8270 for tank investigations.

***Metals analysis should be total in soil and dissolved in groundwater.

This list is generated from the PADEP SERO Crude Oil Parameters for Corrective Action (CDB) SERO | PADEP 9 Aug 2013) combined with PADEP Short List of Petroleum Products (leaded and unleaded gasoline and No. 1, 2, 4, 5, 6 Fuel Oils).



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JC7897 Client: _____ Project: _____
Date / Time Received: 11/5/2015 7:22:00 PM Delivery Method: _____ Airbill #'s: _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.2);

Cooler Security		Y or N		Y or N	
1. Custody Seals Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>		
2. Custody Seals Intact:	<input checked="" type="checkbox"/> <input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>		

Cooler Temperature		Y or N	
1. Temp criteria achieved:	<input checked="" type="checkbox"/> <input type="checkbox"/>		
2. Cooler temp verification:		IR Gun	
3. Cooler media:		Ice (Bag)	
4. No. Coolers:		1	

Quality Control Preservation		Y or N		N/A
1. Trip Blank present / cooler:		<input checked="" type="checkbox"/> <input type="checkbox"/>		
2. Trip Blank listed on COC:		<input checked="" type="checkbox"/> <input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4. VOCs headspace free:		<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>		

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
P: 732.329.3499

Dayton, New Jersey
www.accutest.com

5.1

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Sample Integrity - Documentation		Y or N	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition		Y or N	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions		Y or N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

JC7897: Chain of Custody

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Internal Sample Tracking Chronicle

Stantec Consulting Services Inc.

Job No: JC7897

Sunoco - Marcus Hook Facility, PA
Project No: MHIC 523 Tank

Sample Number	Method	Analyzed	By	Prepped By	Test Codes
JC7897-1	Collected: 05-NOV-15 08:35 By: JD	Received: 05-NOV-15 By: AS			
MH523-11-5.0-20151105					
JC7897-1	SW846 8260C	07-NOV-15 15:11 PR			V8260SL2
JC7897-1	SM2540 G-97	09-NOV-15 13:30 KP			%SOL
JC7897-1	SW846 6010C	11-NOV-15 05:13 ND	10-NOV-15 JA		CO,NI,PB,V,ZN
JC7897-1	SW846 8011	13-NOV-15 23:56 AMA	13-NOV-15 AMA		V8011EDB
JC7897-1	SW846 8270D	19-NOV-15 04:15 SD	10-NOV-15 AQ		AB8270SL
JC7897-2	Collected: 05-NOV-15 08:45 By: JD	Received: 05-NOV-15 By: AS			
MH523-12-5.0-20151105					
JC7897-2	SM2540 G-97	09-NOV-15 13:30 KP			%SOL
JC7897-2	SW846 8260C	10-NOV-15 19:32 PR			V8260SL2
JC7897-2	SW846 6010C	11-NOV-15 05:19 ND	10-NOV-15 JA		CO,NI,PB,V,ZN
JC7897-2	SW846 8270D	13-NOV-15 23:17 BP	10-NOV-15 AQ		AB8270SL
JC7897-2	SW846 8011	14-NOV-15 00:24 AMA	13-NOV-15 AMA		V8011EDB
JC7897-2	SW846 8270D	19-NOV-15 03:22 SD	10-NOV-15 AQ		AB8270SL
JC7897-3	Collected: 05-NOV-15 09:05 By: JD	Received: 05-NOV-15 By: AS			
MH523-13-5.0-20151105					
JC7897-3	SM2540 G-97	09-NOV-15 13:30 KP			%SOL
JC7897-3	SW846 6010C	11-NOV-15 05:25 ND	10-NOV-15 JA		CO,NI,PB,V,ZN
JC7897-3	SW846 8260C	12-NOV-15 10:20 BM			V8260SL2
JC7897-3	SW846 8011	14-NOV-15 00:52 AMA	13-NOV-15 AMA		V8011EDB
JC7897-3	SW846 8270D	19-NOV-15 03:48 SD	10-NOV-15 AQ		AB8270SL

Accutest Internal Chain of Custody

Page 1 of 3

Job Number: JC7897
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Received: 11/05/15

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7897-1.1	Secured Storage	Finley Nyaata	11/10/15 08:15	Retrieve from Storage
JC7897-1.1	Finley Nyaata	Secured Storage	11/10/15 10:16	Return to Storage
JC7897-1.1.1	Finley Nyaata	Organics Prep	11/10/15 08:25	Extract from JC7897-1.1
JC7897-1.1.1	Organics Prep	Adil Quyser	11/10/15 22:20	Extract from JC7897-1.1
JC7897-1.1.1	Adil Quyser	Extract Storage	11/10/15 22:20	Return to Storage
JC7897-1.1.1	Extract Storage	Brittany Piercy	11/13/15 15:37	Retrieve from Storage
JC7897-1.1.1	Brittany Piercy	GCMSZ	11/13/15 15:37	Load on Instrument
JC7897-1.2	Secured Storage	Alfredo Crespo	11/09/15 11:35	Retrieve from Storage
JC7897-1.2	Alfredo Crespo	Secured Staging Area	11/09/15 11:35	Return to Storage
JC7897-1.2	Secured Staging Area	Kruti Patel	11/09/15 12:47	Retrieve from Storage
JC7897-1.2	Kruti Patel	Secured Storage	11/09/15 13:39	Return to Storage
JC7897-1.2	Secured Storage	Jessica Adametz	11/10/15 06:53	Retrieve from Storage
JC7897-1.2	Jessica Adametz	Secured Storage	11/10/15 08:24	Return to Storage
JC7897-1.2.1	Jessica Adametz	Metals Digestion	11/10/15 08:18	Digestate from JC7897-1.2
JC7897-1.2.1	Metals Digestion	Jessica Adametz	11/10/15 08:20	Digestate from JC7897-1.2
JC7897-1.2.1	Jessica Adametz	Metals Digestate Storage	11/10/15 08:20	Return to Storage
JC7897-1.3	Secured Storage	Bernadette Vassilatos	11/09/15 10:01	Retrieve from Storage
JC7897-1.3	Bernadette Vassilatos		11/09/15 10:01	Subcontract
JC7897-1.6	Secured Storage	Payal Rana	11/07/15 14:57	Retrieve from Storage
JC7897-1.6	Payal Rana	GCMSX	11/07/15 14:57	Load on Instrument
JC7897-1.6	GCMSX	Payal Rana	11/09/15 11:59	Unload from Instrument
JC7897-1.6	Payal Rana		11/09/15 11:59	Depleted
JC7897-2.1	Secured Storage	Finley Nyaata	11/10/15 08:15	Retrieve from Storage
JC7897-2.1	Finley Nyaata	Secured Storage	11/10/15 10:16	Return to Storage
JC7897-2.1.1	Finley Nyaata	Organics Prep	11/10/15 08:25	Extract from JC7897-2.1
JC7897-2.1.1	Organics Prep	Adil Quyser	11/10/15 22:20	Extract from JC7897-2.1
JC7897-2.1.1	Adil Quyser	Extract Storage	11/10/15 22:20	Return to Storage
JC7897-2.1.1	Extract Storage	Brittany Piercy	11/13/15 15:37	Retrieve from Storage
JC7897-2.1.1	Brittany Piercy	GCMSZ	11/13/15 15:37	Load on Instrument
JC7897-2.2	Secured Storage	Alfredo Crespo	11/09/15 11:35	Retrieve from Storage
JC7897-2.2	Alfredo Crespo	Secured Staging Area	11/09/15 11:35	Return to Storage
JC7897-2.2	Secured Staging Area	Kruti Patel	11/09/15 12:47	Retrieve from Storage
JC7897-2.2	Kruti Patel	Secured Storage	11/09/15 13:39	Return to Storage
JC7897-2.2	Secured Storage	Jessica Adametz	11/10/15 06:53	Retrieve from Storage
JC7897-2.2	Jessica Adametz	Secured Storage	11/10/15 08:24	Return to Storage

Accutest Internal Chain of Custody

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Job Number: JC7897
 Account: SECORPAE Stantec Consulting Services Inc.
 Project: Sunoco - Marcus Hook Facility, PA
 Received: 11/05/15

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7897-2.2.1	Jessica Adametz	Metals Digestion	11/10/15 08:18	Digestate from JC7897-2.2
JC7897-2.2.1	Metals Digestion	Jessica Adametz	11/10/15 08:20	Digestate from JC7897-2.2
JC7897-2.2.1	Jessica Adametz	Metals Digestate Storage	11/10/15 08:20	Return to Storage
JC7897-2.3	Secured Storage	Bernadette Vassilatos	11/09/15 10:01	Retrieve from Storage
JC7897-2.3	Bernadette Vassilatos		11/09/15 10:01	Subcontract
JC7897-2.5	Secured Storage	Payal Rana	11/10/15 16:14	Retrieve from Storage
JC7897-2.5	Payal Rana	GCMSV	11/10/15 16:14	Load on Instrument
JC7897-2.5	GCMSV	Payal Rana	11/12/15 10:04	Unload from Instrument
JC7897-2.5	Payal Rana		11/12/15 10:04	Depleted
JC7897-2.6	Secured Storage	Payal Rana	11/07/15 14:57	Retrieve from Storage
JC7897-2.6	Payal Rana	GCMSX	11/07/15 14:57	Load on Instrument
JC7897-2.6	GCMSX	Payal Rana	11/09/15 11:59	Unload from Instrument
JC7897-2.6	Payal Rana		11/09/15 11:59	Depleted
JC7897-3.1	Secured Storage	Finley Nyaata	11/10/15 08:15	Retrieve from Storage
JC7897-3.1	Finley Nyaata	Secured Storage	11/10/15 10:16	Return to Storage
JC7897-3.1.1	Finley Nyaata	Organics Prep	11/10/15 08:25	Extract from JC7897-3.1
JC7897-3.1.1	Organics Prep	Adil Quyser	11/10/15 22:20	Extract from JC7897-3.1
JC7897-3.1.1	Adil Quyser	Extract Storage	11/10/15 22:20	Return to Storage
JC7897-3.1.1	Extract Storage	Brittany Piercy	11/13/15 15:37	Retrieve from Storage
JC7897-3.1.1	Brittany Piercy	GCMSZ	11/13/15 15:37	Load on Instrument
JC7897-3.2	Secured Storage	Alfredo Crespo	11/09/15 11:35	Retrieve from Storage
JC7897-3.2	Alfredo Crespo	Secured Staging Area	11/09/15 11:35	Return to Storage
JC7897-3.2	Secured Staging Area	Kruti Patel	11/09/15 12:47	Retrieve from Storage
JC7897-3.2	Kruti Patel	Secured Storage	11/09/15 13:39	Return to Storage
JC7897-3.2	Secured Storage	Jessica Adametz	11/10/15 06:53	Retrieve from Storage
JC7897-3.2	Jessica Adametz	Secured Storage	11/10/15 08:24	Return to Storage
JC7897-3.2.1	Jessica Adametz	Metals Digestion	11/10/15 08:18	Digestate from JC7897-3.2
JC7897-3.2.1	Metals Digestion	Jessica Adametz	11/10/15 08:20	Digestate from JC7897-3.2
JC7897-3.2.1	Jessica Adametz	Metals Digestate Storage	11/10/15 08:20	Return to Storage
JC7897-3.3	Secured Storage	Bernadette Vassilatos	11/09/15 10:01	Retrieve from Storage
JC7897-3.3	Bernadette Vassilatos		11/09/15 10:01	Subcontract
JC7897-3.4	Secured Storage	Alexis Jones	11/10/15 11:48	Retrieve from Storage
JC7897-3.4	Alexis Jones	Secured Storage	11/10/15 16:33	Return to Storage
JC7897-3.4	Secured Storage	Alexis Jones	11/11/15 09:12	Retrieve from Storage
JC7897-3.4	Alexis Jones	Secured Storage	11/11/15 16:33	Return to Storage

Accutest Internal Chain of Custody

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Job Number: JC7897
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Received: 11/05/15

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7897-3.4	Secured Storage	Alexis Jones	11/12/15 08:55	Retrieve from Storage
JC7897-3.4	Alexis Jones	Secured Storage	11/12/15 16:32	Return to Storage
JC7897-3.6	Secured Storage	Payal Rana	11/07/15 14:57	Retrieve from Storage
JC7897-3.6	Payal Rana	GCMSX	11/07/15 14:57	Load on Instrument
JC7897-3.6	GCMSX	Payal Rana	11/09/15 11:59	Unload from Instrument
JC7897-3.6	Payal Rana		11/09/15 11:59	Depleted



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries



Method Blank Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX6848-MB	X159515.D	1	11/07/15	PR	n/a	n/a	VX6848

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.17	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.21	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.32	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.13	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.16	ug/kg	
110-54-3	Hexane	ND	5.0	0.39	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	0.11	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.15	ug/kg	
91-20-3	Naphthalene	ND	5.0	0.19	ug/kg	
108-88-3	Toluene	ND	1.0	0.21	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.19	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.27	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	102%
17060-07-0	1,2-Dichloroethane-D4	107%
2037-26-5	Toluene-D8	101%
460-00-4	4-Bromofluorobenzene	102%

Method Blank Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV6649-MB	V157412.D	1	11/10/15	PR	n/a	n/a	VV6649

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.17	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.21	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.32	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.13	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.16	ug/kg	
110-54-3	Hexane	ND	5.0	0.39	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	0.11	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.15	ug/kg	
91-20-3	Naphthalene	ND	5.0	0.19	ug/kg	
108-88-3	Toluene	ND	1.0	0.21	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.19	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.27	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	96% 70-122%
17060-07-0	1,2-Dichloroethane-D4	85% 68-124%
2037-26-5	Toluene-D8	100% 77-125%
460-00-4	4-Bromofluorobenzene	99% 72-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Method Blank Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD9625-MB	D235747.D	1	11/12/15	BM	n/a	n/a	VD9625

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	13	3.3	ug/kg	
135-98-8	sec-Butylbenzene	ND	50	4.3	ug/kg	
98-06-6	tert-Butylbenzene	ND	50	5.3	ug/kg	
110-82-7	Cyclohexane	ND	50	7.9	ug/kg	
107-06-2	1,2-Dichloroethane ^a	ND	25	5.0	ug/kg	
100-41-4	Ethylbenzene	ND	25	4.1	ug/kg	
110-54-3	Hexane	ND	130	9.7	ug/kg	
98-82-8	Isopropylbenzene	ND	50	2.7	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	25	3.8	ug/kg	
91-20-3	Naphthalene	ND	130	4.7	ug/kg	
108-88-3	Toluene	ND	25	5.2	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	50	5.0	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	50	4.8	ug/kg	
1330-20-7	Xylene (total)	ND	25	6.9	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	97% 70-122%
17060-07-0	1,2-Dichloroethane-D4	94% 68-124%
2037-26-5	Toluene-D8	100% 77-125%
460-00-4	4-Bromofluorobenzene	99% 72-130%

(a) MDL from current instrument.

Method Blank Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX6848-MB2	X159549.D	1	11/09/15	PR	n/a	n/a	VX6848

The QC reported here applies to the following samples:

Method: SW846 8260C

JC5549-1AMS, JC5549-1AMSD

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.17	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.21	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.32	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.13	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.16	ug/kg	
110-54-3	Hexane	ND	5.0	0.39	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	0.11	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.15	ug/kg	
91-20-3	Naphthalene	ND	5.0	0.19	ug/kg	
108-88-3	Toluene	ND	1.0	0.21	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.19	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.27	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	107% 70-122%
17060-07-0	1,2-Dichloroethane-D4	118% 68-124%
2037-26-5	Toluene-D8	103% 77-125%
460-00-4	4-Bromofluorobenzene	103% 72-130%

Blank Spike Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX6848-BS	X159516.D	1	11/07/15	PR	n/a	n/a	VX6848

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.4	101	77-122
135-98-8	sec-Butylbenzene	50	49.1	98	70-125
98-06-6	tert-Butylbenzene	50	50.5	101	70-126
110-82-7	Cyclohexane	50	51.7	103	66-131
107-06-2	1,2-Dichloroethane	50	53.5	107	77-140
100-41-4	Ethylbenzene	50	48.5	97	75-121
110-54-3	Hexane	50	46.0	92	37-137
98-82-8	Isopropylbenzene	50	51.2	102	70-126
1634-04-4	Methyl Tert Butyl Ether	100	105	105	77-121
91-20-3	Naphthalene	50	45.8	92	74-126
108-88-3	Toluene	50	50.2	100	75-123
95-63-6	1,2,4-Trimethylbenzene	50	49.3	99	75-126
108-67-8	1,3,5-Trimethylbenzene	50	48.9	98	72-124
1330-20-7	Xylene (total)	150	148	99	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	104%	70-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	102%	77-125%
460-00-4	4-Bromofluorobenzene	103%	72-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV6649-BS	V157413.D	1	11/10/15	PR	n/a	n/a	VV6649

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	47.7	95	77-122
135-98-8	sec-Butylbenzene	50	47.1	94	70-125
98-06-6	tert-Butylbenzene	50	47.1	94	70-126
110-82-7	Cyclohexane	50	47.9	96	66-131
107-06-2	1,2-Dichloroethane	50	45.9	92	77-140
100-41-4	Ethylbenzene	50	46.1	92	75-121
110-54-3	Hexane	50	47.6	95	37-137
98-82-8	Isopropylbenzene	50	46.3	93	70-126
1634-04-4	Methyl Tert Butyl Ether	100	93.6	94	77-121
91-20-3	Naphthalene	50	47.9	96	74-126
108-88-3	Toluene	50	47.4	95	75-123
95-63-6	1,2,4-Trimethylbenzene	50	49.5	99	75-126
108-67-8	1,3,5-Trimethylbenzene	50	46.6	93	72-124
1330-20-7	Xylene (total)	150	145	97	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	70-122%
17060-07-0	1,2-Dichloroethane-D4	89%	68-124%
2037-26-5	Toluene-D8	102%	77-125%
460-00-4	4-Bromofluorobenzene	101%	72-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD9625-BS	D235748.D	1	11/12/15	BM	n/a	n/a	VD9625

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2390	96	77-122
135-98-8	sec-Butylbenzene	2500	2260	90	70-125
98-06-6	tert-Butylbenzene	2500	2320	93	70-126
110-82-7	Cyclohexane	2500	2300	92	66-131
107-06-2	1,2-Dichloroethane	2500	2220	89	77-140
100-41-4	Ethylbenzene	2500	2300	92	75-121
110-54-3	Hexane	2500	1650	66	37-137
98-82-8	Isopropylbenzene	2500	2420	97	70-126
1634-04-4	Methyl Tert Butyl Ether	5000	4530	91	77-121
91-20-3	Naphthalene	2500	2270	91	74-126
108-88-3	Toluene	2500	2370	95	75-123
95-63-6	1,2,4-Trimethylbenzene	2500	2440	98	75-126
108-67-8	1,3,5-Trimethylbenzene	2500	2370	95	72-124
1330-20-7	Xylene (total)	7500	7170	96	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	70-122%
17060-07-0	1,2-Dichloroethane-D4	96%	68-124%
2037-26-5	Toluene-D8	103%	77-125%
460-00-4	4-Bromofluorobenzene	102%	72-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC8038-12MS	V157419.D	1	11/10/15	PR	n/a	n/a	VV6649
JC8038-12	V157417.D	1	11/10/15	PR	n/a	n/a	VV6649

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-2

CAS No.	Compound	JC8038-12		Spike	MS	MS	Limits
		ug/kg	Q	ug/kg	ug/kg	%	
71-43-2	Benzene	ND		526	391	74	48-136
135-98-8	sec-Butylbenzene	ND		526	230	44	23-151
98-06-6	tert-Butylbenzene	ND		526	263	50	30-149
110-82-7	Cyclohexane	ND		526	311	59	22-154
107-06-2	1,2-Dichloroethane	ND		526	344	65	56-140
100-41-4	Ethylbenzene	ND		526	308	59	34-145
110-54-3	Hexane	ND		526	249	47	10-157
98-82-8	Isopropylbenzene	ND		526	316	60	36-145
1634-04-4	Methyl Tert Butyl Ether	ND		1050	680	65	54-129
91-20-3	Naphthalene	ND		526	127	24	12-160
108-88-3	Toluene	ND		526	351	67	40-141
95-63-6	1,2,4-Trimethylbenzene	ND		526	290	55	23-152
108-67-8	1,3,5-Trimethylbenzene	ND		526	275	52	26-150
1330-20-7	Xylene (total)	ND		1580	931	59	34-146

CAS No.	Surrogate Recoveries	MS	JC8038-12	Limits
1868-53-7	Dibromofluoromethane	98%	101%	70-122%
17060-07-0	1,2-Dichloroethane-D4	85%	97%	68-124%
2037-26-5	Toluene-D8	102%	100%	77-125%
460-00-4	4-Bromofluorobenzene	93%	98%	72-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC5549-1AMS	X159550.D	1	11/09/15	PR	n/a	n/a	VX6848
JC5549-1AMSD	X159551.D	1	11/09/15	PR	n/a	n/a	VX6848
JC5549-1A ^a	X159526.D	1	11/07/15	PR	n/a	n/a	VX6848

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-1

CAS No.	Compound	JC5549-1A		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
71-43-2	Benzene	ND		60.2	33.7	56	57.5	36.7	64	9	48-136/30
135-98-8	sec-Butylbenzene	ND		60.2	45.1	75	57.5	42.5	74	6	23-151/34
98-06-6	tert-Butylbenzene	ND		60.2	46.1	77	57.5	43.7	76	5	30-149/34
110-82-7	Cyclohexane	ND		60.2	43.1	72	57.5	43.9	76	2	22-154/33
107-06-2	1,2-Dichloroethane	5.8		60.2	40.7	58	57.5	40.2	60	1	56-140/24
100-41-4	Ethylbenzene	ND		60.2	34.8	58	57.5	36.5	64	5	34-145/29
110-54-3	Hexane	ND		60.2	26.7	44	57.5	24.2	42	10	10-157/33
98-82-8	Isopropylbenzene	ND		60.2	51.0	85	57.5	49.4	86	3	36-145/33
1634-04-4	Methyl Tert Butyl Ether	ND		120	125	104	115	119	104	5	54-129/25
91-20-3	Naphthalene	ND		60.2	20.9	35	57.5	15.3	27	31	12-160/33
108-88-3	Toluene	ND		60.2	29.4	49	57.5	32.8	57	11	40-141/30
95-63-6	1,2,4-Trimethylbenzene	ND		60.2	41.3	69	57.5	38.2	66	8	23-152/31
108-67-8	1,3,5-Trimethylbenzene	ND		60.2	44.6	74	57.5	42.2	73	6	26-150/32
1330-20-7	Xylene (total)	ND		181	104	58	172	107	62	3	34-146/29

CAS No.	Surrogate Recoveries	MS	MSD	JC5549-1A	Limits
1868-53-7	Dibromofluoromethane	106%	105%	104%	70-122%
17060-07-0	1,2-Dichloroethane-D4	123%	124%	113%	68-124%
2037-26-5	Toluene-D8	97%	99%	94%	77-125%
460-00-4	4-Bromofluorobenzene	119%	117%	108%	72-130%

(a) Sample analyzed outside the holding time due to difficulty filtering the sample.

* = Outside of Control Limits.

6.4.1
6

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC7897-3MS	D235749.D	1	11/12/15	BM	n/a	n/a	VD9625
JC7897-3MSD	D235750.D	1	11/12/15	BM	n/a	n/a	VD9625
JC7897-3	D235765.D	1	11/12/15	BM	n/a	n/a	VD9625

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-3

CAS No.	Compound	JC7897-3		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
71-43-2	Benzene	24.1	J	5780	6130	106	5780	5970	103	3	48-136/30
135-98-8	sec-Butylbenzene	ND		5780	6310	109	5780	6220	107	1	23-151/34
98-06-6	tert-Butylbenzene	ND		5780	6300	109	5780	6180	107	2	30-149/34
110-82-7	Cyclohexane	ND		5780	6330	109	5780	6180	107	2	22-154/33
107-06-2	1,2-Dichloroethane	ND		5780	5440	94	5780	5290	91	3	56-140/24
100-41-4	Ethylbenzene	ND		5780	5920	102	5780	5800	100	2	34-145/29
110-54-3	Hexane	ND		5780	6130	106	5780	5900	102	4	10-157/33
98-82-8	Isopropylbenzene	27.1	J	5780	6160	106	5780	6080	105	1	36-145/33
1634-04-4	Methyl Tert Butyl Ether	ND		11600	10800	93	11600	10700	93	1	54-129/25
91-20-3	Naphthalene	834		5780	5460	90	5780	5240	86	4	12-160/33
108-88-3	Toluene	ND		5780	6120	106	5780	5970	103	2	40-141/30
95-63-6	1,2,4-Trimethylbenzene	106	J	5780	6370	108	5780	6280	107	1	23-152/31
108-67-8	1,3,5-Trimethylbenzene	273		5780	6510	108	5780	6430	106	1	26-150/32
1330-20-7	Xylene (total)	66.1	J	17300	18600	107	17300	18300	105	2	34-146/29

CAS No.	Surrogate Recoveries	MS	MSD	JC7897-3	Limits
1868-53-7	Dibromofluoromethane	98%	97%	98%	70-122%
17060-07-0	1,2-Dichloroethane-D4	98%	95%	98%	68-124%
2037-26-5	Toluene-D8	103%	103%	102%	77-125%
460-00-4	4-Bromofluorobenzene	98%	99%	101%	72-130%

* = Outside of Control Limits.

6.4.2
6

Duplicate Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC8031-3DUP	V157423.D	1	11/10/15	PR	n/a	n/a	VV6649
JC8031-3	V157422.D	1	11/10/15	PR	n/a	n/a	VV6649

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7897-2

CAS No.	Compound	JC8031-3		DUP		RPD	Limits
		ug/kg	Q	ug/kg	Q		
71-43-2	Benzene	ND		ND		nc	17
135-98-8	sec-Butylbenzene	ND		ND		nc	30
98-06-6	tert-Butylbenzene	ND		ND		nc	30
110-82-7	Cyclohexane	ND		ND		nc	30
107-06-2	1,2-Dichloroethane	ND		ND		nc	30
100-41-4	Ethylbenzene	ND		ND		nc	23
110-54-3	Hexane	ND		ND		nc	30
98-82-8	Isopropylbenzene	ND		ND		nc	22
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	30
91-20-3	Naphthalene	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	22
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	30
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	30
1330-20-7	Xylene (total)	ND		ND		nc	21

CAS No.	Surrogate Recoveries	DUP	JC8031-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	70-122%
17060-07-0	1,2-Dichloroethane-D4	92%	89%	68-124%
2037-26-5	Toluene-D8	102%	101%	77-125%
460-00-4	4-Bromofluorobenzene	101%	101%	72-130%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VD9588-BFB	Injection Date:	10/15/15
Lab File ID:	D234784.D	Injection Time:	11:21
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	20776	21.9	Pass
75	30.0 - 60.0% of mass 95	49408	52.2	Pass
95	Base peak, 100% relative abundance	94693	100.0	Pass
96	5.0 - 9.0% of mass 95	6389	6.75	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) ^a Pass
174	50.0 - 120.0% of mass 95	77493	81.8	Pass
175	5.0 - 9.0% of mass 174	5909	6.24	(7.63) ^a Pass
176	95.0 - 101.0% of mass 174	76122	80.4	(98.2) ^a Pass
177	5.0 - 9.0% of mass 176	4951	5.23	(6.50) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD9588-IC9588	D234785.D	10/15/15	11:55	00:34	Initial cal 0.2
VD9588-IC9588	D234786.D	10/15/15	12:25	01:04	Initial cal 0.5
VD9588-IC9588	D234787.D	10/15/15	12:56	01:35	Initial cal 1.0
VD9588-IC9588	D234788.D	10/15/15	13:26	02:05	Initial cal 2.0
VD9588-IC9588	D234789.D	10/15/15	13:57	02:36	Initial cal 4.0
VD9588-IC9588	D234790.D	10/15/15	14:28	03:07	Initial cal 8.0
VD9588-IC9588	D234791.D	10/15/15	14:58	03:37	Initial cal 20
VD9588-ICC9588	D234792.D	10/15/15	15:29	04:08	Initial cal 50
VD9588-IC9588	D234793.D	10/15/15	16:00	04:39	Initial cal 100
VD9588-IC9588	D234794.D	10/15/15	16:30	05:09	Initial cal 200
VD9588-ICV9588	D234797.D	10/15/15	18:02	06:41	Initial cal verification 50

Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VD9625-BFB	Injection Date:	11/11/15
Lab File ID:	D235744A.D	Injection Time:	23:34
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	21896	19.9	Pass
75	30.0 - 60.0% of mass 95	54493	49.4	Pass
95	Base peak, 100% relative abundance	110280	100.0	Pass
96	5.0 - 9.0% of mass 95	7647	6.93	Pass
173	Less than 2.0% of mass 174	294	0.27	(0.34) ^a Pass
174	50.0 - 120.0% of mass 95	86107	78.1	Pass
175	5.0 - 9.0% of mass 174	6343	5.75	(7.37) ^a Pass
176	95.0 - 101.0% of mass 174	83752	75.9	(97.3) ^a Pass
177	5.0 - 9.0% of mass 176	5487	4.98	(6.55) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD9625-CC9588	D235745A.D	11/12/15	00:04	00:30	Continuing cal 50
VD9625-MB	D235747.D	11/12/15	01:13	01:39	Method Blank
VD9625-BS	D235748.D	11/12/15	01:44	02:10	Blank Spike
JC7897-3MS	D235749.D	11/12/15	02:15	02:41	Matrix Spike
JC7897-3MSD	D235750.D	11/12/15	02:45	03:11	Matrix Spike Duplicate
ZZZZZZ	D235752.D	11/12/15	03:45	04:11	(unrelated sample)
ZZZZZZ	D235753.D	11/12/15	04:16	04:42	(unrelated sample)
ZZZZZZ	D235754.D	11/12/15	04:46	05:12	(unrelated sample)
ZZZZZZ	D235755.D	11/12/15	05:16	05:42	(unrelated sample)
ZZZZZZ	D235756.D	11/12/15	05:46	06:12	(unrelated sample)
ZZZZZZ	D235757.D	11/12/15	06:17	06:43	(unrelated sample)
ZZZZZZ	D235761.D	11/12/15	08:18	08:44	(unrelated sample)
ZZZZZZ	D235764.D	11/12/15	09:49	10:15	(unrelated sample)
JC7897-3	D235765.D	11/12/15	10:20	10:46	MH523-13-5.0-20151105
ZZZZZZ	D235766.D	11/12/15	10:50	11:16	(unrelated sample)

Instrument Performance Check (BFB)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VV6633-BFB	Injection Date:	10/28/15
Lab File ID:	V156927.D	Injection Time:	17:02
Instrument ID:	GCMSV		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	23424	19.6	Pass
75	30.0 - 60.0% of mass 95	57877	48.5	Pass
95	Base peak, 100% relative abundance	119450	100.0	Pass
96	5.0 - 9.0% of mass 95	8408	7.04	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) ^a Pass
174	50.0 - 150.0% of mass 95	117664	98.5	Pass
175	5.0 - 9.0% of mass 174	8716	7.30	(7.41) ^a Pass
176	95.0 - 101.0% of mass 174	112608	94.3	(95.7) ^a Pass
177	5.0 - 9.0% of mass 176	7182	6.01	(6.38) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VV6633-IC6633	V156929.D	10/28/15	18:09	01:07	Initial cal 0.5
VV6633-IC6633	V156930.D	10/28/15	18:38	01:36	Initial cal 1
VV6633-IC6633	V156931.D	10/28/15	19:06	02:04	Initial cal 2
VV6633-IC6633	V156932.D	10/28/15	19:35	02:33	Initial cal 4
VV6633-IC6633	V156933.D	10/28/15	20:03	03:01	Initial cal 8
VV6633-IC6633	V156934.D	10/28/15	20:32	03:30	Initial cal 20
VV6633-ICC6633	V156935.D	10/28/15	21:00	03:58	Initial cal 50
VV6633-IC6633	V156936.D	10/28/15	21:29	04:27	Initial cal 100
VV6633-IC6633	V156937.D	10/28/15	21:58	04:56	Initial cal 200
VV6633-ICV6633	V156940.D	10/28/15	23:23	06:21	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VV6649-BFB	Injection Date:	11/10/15
Lab File ID:	V157409.D	Injection Time:	10:05
Instrument ID:	GCMSV		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	18364	17.9	Pass
75	30.0 - 60.0% of mass 95	46923	45.8	Pass
95	Base peak, 100% relative abundance	102425	100.0	Pass
96	5.0 - 9.0% of mass 95	7002	6.84	Pass
173	Less than 2.0% of mass 174	142	0.14	(0.15) ^a Pass
174	50.0 - 150.0% of mass 95	95265	93.0	Pass
175	5.0 - 9.0% of mass 174	7040	6.87	(7.39) ^a Pass
176	95.0 - 101.0% of mass 174	91142	89.0	(95.7) ^a Pass
177	5.0 - 9.0% of mass 176	6132	5.99	(6.73) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VV6649-CC6633	V157410.D	11/10/15	10:34	00:29	Continuing cal 20
VV6649-MB	V157412.D	11/10/15	11:34	01:29	Method Blank
VV6649-BS	V157413.D	11/10/15	12:13	02:08	Blank Spike
ZZZZZZ	V157415.D	11/10/15	13:14	03:09	(unrelated sample)
ZZZZZZ	V157416.D	11/10/15	13:42	03:37	(unrelated sample)
JC8038-12	V157417.D	11/10/15	14:11	04:06	(used for QC only; not part of job JC7897)
ZZZZZZ	V157418.D	11/10/15	14:39	04:34	(unrelated sample)
JC8038-12MS	V157419.D	11/10/15	15:12	05:07	Matrix Spike
ZZZZZZ	V157421.D	11/10/15	16:09	06:04	(unrelated sample)
JC8031-3	V157422.D	11/10/15	16:38	06:33	(used for QC only; not part of job JC7897)
JC8031-3DUP	V157423.D	11/10/15	17:09	07:04	Duplicate
ZZZZZZ	V157424.D	11/10/15	17:38	07:33	(unrelated sample)
ZZZZZZ	V157425.D	11/10/15	18:06	08:01	(unrelated sample)
ZZZZZZ	V157426.D	11/10/15	18:35	08:30	(unrelated sample)
ZZZZZZ	V157427.D	11/10/15	19:03	08:58	(unrelated sample)
JC7897-2	V157428.D	11/10/15	19:32	09:27	MH523-12-5.0-20151105
ZZZZZZ	V157429.D	11/10/15	20:00	09:55	(unrelated sample)
ZZZZZZ	V157430.D	11/10/15	20:28	10:23	(unrelated sample)
ZZZZZZ	V157431.D	11/10/15	20:57	10:52	(unrelated sample)

Instrument Performance Check (BFB)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VX6845-BFB	Injection Date:	11/05/15
Lab File ID:	X159458.D	Injection Time:	12:12
Instrument ID:	GCMSX		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	9140	18.7	Pass
75	30.0 - 60.0% of mass 95	21389	43.7	Pass
95	Base peak, 100% relative abundance	48901	100.0	Pass
96	5.0 - 9.0% of mass 95	3181	6.50	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) ^a Pass
174	50.0 - 120.0% of mass 95	46778	95.7	Pass
175	5.0 - 9.0% of mass 174	3780	7.73	(8.08) ^a Pass
176	95.0 - 101.0% of mass 174	45650	93.4	(97.6) ^a Pass
177	5.0 - 9.0% of mass 176	2879	5.89	(6.31) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VX6845-IC6845	X159459.D	11/05/15	12:49	00:37	Initial cal 0.2
VX6845-IC6845	X159460.D	11/05/15	13:19	01:07	Initial cal 0.5
VX6845-IC6845	X159461.D	11/05/15	13:50	01:38	Initial cal 1
VX6845-IC6845	X159462.D	11/05/15	14:19	02:07	Initial cal 2
VX6845-IC6845	X159463.D	11/05/15	14:49	02:37	Initial cal 4
VX6845-IC6845	X159464.D	11/05/15	15:18	03:06	Initial cal 8
VX6845-IC6845	X159466.D	11/05/15	15:48	03:36	Initial cal 20
VX6845-ICC6845	X159467.D	11/05/15	16:18	04:06	Initial cal 50
VX6845-IC6845	X159468.D	11/05/15	16:48	04:36	Initial cal 100
VX6845-IC6845	X159469.D	11/05/15	17:18	05:06	Initial cal 200
VX6845-ICV6845	X159472.D	11/05/15	18:48	06:36	Initial cal verification 50

Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VX6848-BFB	Injection Date:	11/07/15
Lab File ID:	X159512.D	Injection Time:	10:14
Instrument ID:	GCMSX		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	9410	20.1	Pass
75	30.0 - 60.0% of mass 95	22202	47.4	Pass
95	Base peak, 100% relative abundance	46821	100.0	Pass
96	5.0 - 9.0% of mass 95	3363	7.18	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) ^a Pass
174	50.0 - 120.0% of mass 95	41818	89.3	Pass
175	5.0 - 9.0% of mass 174	3598	7.68	(8.60) ^a Pass
176	95.0 - 101.0% of mass 174	40453	86.4	(96.7) ^a Pass
177	5.0 - 9.0% of mass 176	2769	5.91	(6.84) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VX6848-CC6845	X159513.D	11/07/15	10:44	00:30	Continuing cal 20
VX6848-MB	X159515.D	11/07/15	11:52	01:38	Method Blank
VX6848-BS	X159516.D	11/07/15	12:47	02:33	Blank Spike
JC7897-1	X159519.D	11/07/15	15:11	04:57	MH523-11-5.0-20151105
JC5549-1A	X159526.D	11/07/15	19:10	08:56	(used for QC only; not part of job JC7897)

Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VX6848-BFB2	Injection Date:	11/09/15
Lab File ID:	X159545.D	Injection Time:	09:53
Instrument ID:	GCMSX		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	11142	20.6	Pass
75	30.0 - 60.0% of mass 95	24880	46.1	Pass
95	Base peak, 100% relative abundance	53960	100.0	Pass
96	5.0 - 9.0% of mass 95	3619	6.71	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) ^a Pass
174	50.0 - 120.0% of mass 95	47445	87.9	Pass
175	5.0 - 9.0% of mass 174	3876	7.18	(8.17) ^a Pass
176	95.0 - 101.0% of mass 174	46072	85.4	(97.1) ^a Pass
177	5.0 - 9.0% of mass 176	3143	5.82	(6.82) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VX6848-CC6845	X159547.D	11/09/15	11:11	01:18	Continuing cal 20
VX6848-MB2	X159549.D	11/09/15	12:22	02:29	Method Blank
JC5549-1AMS	X159550.D	11/09/15	12:52	02:59	Matrix Spike
JC5549-1AMSD	X159551.D	11/09/15	13:22	03:29	Matrix Spike Duplicate

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	VD9625-CC9588	Injection Date:	11/12/15
Lab File ID:	D235745A.D	Injection Time:	00:04
Instrument ID:	GCMSD	Method:	SW846 8260C

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	RT
Check Std	135106	7.96	259893	10.13	355541	11.05
Upper Limit ^a	270212	8.46	519786	10.63	711082	11.55
Lower Limit ^b	67553	7.46	129947	9.63	177771	10.55
VD9625-MB	130962	7.97	256504	10.12	350218	11.05
VD9625-BS	139238	7.97	263380	10.13	363405	11.06
JC7897-3MS	146769	7.98	258742	10.13	358797	11.06
JC7897-3MSD	130594	7.97	265278	10.12	368780	11.06
ZZZZZZ	128017	7.96	271852	10.12	371461	11.06
ZZZZZZ	129021	7.95	268023	10.12	362626	11.06
ZZZZZZ	128576	7.96	258608	10.12	350492	11.05
ZZZZZZ	130798	7.97	272781	10.13	374366	11.06
ZZZZZZ	131578	7.95	259572	10.13	353334	11.06
ZZZZZZ	160970	8.16	261099	10.12	353455	11.05
ZZZZZZ	140099	7.96	259901	10.12	351774	11.06
ZZZZZZ	140680	7.96	264644	10.13	358663	11.05
JC7897-3	179764	8.16	259121	10.13	357797	11.05
ZZZZZZ	150858	8.04	275752	10.13	378613	11.06

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	VV6649-CC6633	Injection Date:	11/10/15
Lab File ID:	V157410.D	Injection Time:	10:34
Instrument ID:	GCMSV	Method:	SW846 8260C

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	RT
VV6649-MB	174133	7.68	454207	9.91	527111	10.86
VV6649-BS	202992	7.68	411463	9.91	491462	10.85
ZZZZZZ	178490	7.67	414444	9.91	488320	10.86
ZZZZZZ	172444	7.67	424055	9.91	497885	10.86
JC8038-12	247088	7.67	427713	9.91	507010	10.86
ZZZZZZ	202466	7.67	457174	9.91	542693	10.86
JC8038-12MS	130278	7.69	441778	9.91	522144	10.86
ZZZZZZ	191059	7.69	455170	9.91	535307	10.86
JC8031-3	189738	7.69	451423	9.91	530965	10.86
JC8031-3DUP	208963	7.69	434035	9.91	513178	10.86
ZZZZZZ	190740	7.68	426286	9.91	504100	10.86
ZZZZZZ	174048	7.68	429160	9.91	503848	10.86
ZZZZZZ	172435	7.69	436522	9.91	514582	10.86
ZZZZZZ	175653	7.68	426329	9.91	498627	10.86
JC7897-2	181988	7.68	432857	9.91	511983	10.86
ZZZZZZ	165735	7.69	383006	9.91	449111	10.86
ZZZZZZ	201601	7.67	462089	9.91	548351	10.86
ZZZZZZ	213968	7.67	462157	9.91	539553	10.86

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	VX6848-CC6845	Injection Date:	11/07/15
Lab File ID:	X159513.D	Injection Time:	10:44
Instrument ID:	GCMSX	Method:	SW846 8260C

	IS 1 AREA	IS 2 RT	IS 2 AREA	IS 3 RT	IS 3 AREA	IS 4 RT	IS 4 AREA	IS 5 RT	IS 5 AREA	IS 5 RT
Check Std	90213	7.47	189418	10.18	223637	11.35	196244	15.56	101506	18.32
Upper Limit ^a	180426	7.97	378836	10.68	447274	11.85	392488	16.06	203012	18.82
Lower Limit ^b	45107	6.97	94709	9.68	111819	10.85	98122	15.06	50753	17.82

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT
VX6848-MB	77263	7.45	187985	10.18	224608	11.35	197367	15.57	107784	18.32
VX6848-BS	88350	7.46	180147	10.17	217313	11.35	191236	15.56	98210	18.32
JC7897-1	103004	7.46	188637	10.17	230683	11.35	209967	15.56	112213	18.32
JC5549-1A	112645	7.47	168634	10.18	183635	11.35	140934	15.56	70626	18.32

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	VX6848-CC6845	Injection Date:	11/09/15
Lab File ID:	X159547.D	Injection Time:	11:11
Instrument ID:	GCMSX	Method:	SW846 8260C

	IS 1 AREA	IS 2 RT	IS 2 AREA	IS 3 RT	IS 3 AREA	IS 4 RT	IS 4 AREA	IS 5 RT	IS 5 AREA	IS 5 RT
Check Std	94954	7.44	181984	10.15	215098	11.33	189362	15.54	98213	18.30
Upper Limit ^a	189908	7.94	363968	10.65	430196	11.83	378724	16.04	196426	18.80
Lower Limit ^b	47477	6.94	90992	9.65	107549	10.83	94681	15.04	49107	17.80

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT
VX6848-MB2	98687	7.44	185182	10.15	223927	11.33	200414	15.55	109877	18.30
JC5549-1AMS	140196	7.47	178563	10.16	206624	11.33	158989	15.55	71372	18.30
JC5549-1AMSD	83383	7.46	180701	10.16	208170	11.33	166372	15.55	78257	18.31

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Method: SW846 8260C

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JC7897-1	X159519.D	108	120	102	105
JC7897-2	V157428.D	100	90	101	101
JC7897-3	D235765.D	98	98	102	101
JC5549-1AMS	X159550.D	106	123	97	119
JC5549-1AMSD	X159551.D	105	124	99	117
JC7897-3MS	D235749.D	98	98	103	98
JC7897-3MSD	D235750.D	97	95	103	99
JC8031-3DUP	V157423.D	99	92	102	101
JC8038-12MS	V157419.D	98	85	102	93
VD9625-BS	D235748.D	97	96	103	102
VD9625-MB	D235747.D	97	94	100	99
VV6649-BS	V157413.D	99	89	102	101
VV6649-MB	V157412.D	96	85	100	99
VX6848-BS	X159516.D	104	111	102	103
VX6848-MB	X159515.D	102	107	101	102
VX6848-MB2	X159549.D	107	118	103	103

Surrogate Compounds Recovery Limits

S1 = Dibromofluoromethane
S2 = 1,2-Dichloroethane-D4
S3 = Toluene-D8
S4 = 4-Bromofluorobenzene

70-122%

68-124%

77-125%

72-130%

6.8.1
6

Initial Calibration Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PASample: VD9588-ICC9588
Lab FileID: D234792.D

Response Factor Report MSD

Method : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)

Title : SW-846 Method 8260C

Last Update : Mon Oct 19 09:20:02 2015

Response via : Initial Calibration

Calibration Files

4	=d234789.D	2	=d234788.D	0.5	=d234786.D	50	=d234792.D
100	=d234793.D	1	=d234787.D	200	=d234794.D	20	=d234791.D
8	=d234790.D	0.2	=d234785.D	=	=		

Compound

	4	2	0.5	50	100	1	200	20	8	0.2	Avg	%RSD
--	---	---	-----	----	-----	---	-----	----	---	-----	-----	------

1) I	Tert Butyl Alcohol-d9	-----ISTD-----									
2)	1,4-dioxane										
	0.097 0.095	0.103 0.105 0.098 0.095 0.102 0.101									
3)	tertiary butyl alcohol										
	1.183 1.114	1.128 1.127 1.153 1.070 1.160 1.124									
4) I	pentafluorobenzene	-----ISTD-----									
5)	1,2-dichloro-1,2,2-trifluoroet										
		0.000# -1.00									
6)	chlorodifluoromethane										
	0.788 0.770	0.843 0.779 0.762 0.792 0.789 0.744									
7)	dichlorodifluoromethane										
	1.018 0.958	1.076 1.132 0.907 1.073 1.077 1.095									
8)	chloromethane										
	0.824 0.756	0.863 0.984 0.984 0.949 0.855 0.846									
9)	1,3-butadiene										
		0.000# -1.00									
10)	vinyl chloride										
	0.936 0.865	0.985 0.986 1.061 0.973 1.031 0.933 0.950 0.766									
11)	bromomethane										
	0.564 0.630	0.638 0.689 0.839 0.749 0.859 0.605 0.603									
12)	chloroethane										
	0.437 0.448	0.489 0.476 0.559 0.525 0.577 0.448 0.451									
13)	vinyl bromide										
		0.000# -1.00									
14)	trichlorofluoromethane										
	1.058 0.962	1.001 1.130 1.239 1.022 1.224 1.096 1.101									
15)	pentane										
		0.000# -1.00									
16)	ethyl ether										
	0.266 0.264	0.298 0.250 0.249 0.245 0.255 0.239 0.260									
17)	acrolein										
	0.100 0.106	0.096 0.105 0.092 0.098									
18)	chlorotrifluoroethene										
		0.000# -1.00									
19)	2-chloropropane										
	1.129 1.144	1.122 1.106 1.126 1.425 1.074 0.981 1.131									
20)	1,1-dichloroethene										
	0.902 0.824	0.824 0.953 0.978 0.923 0.929 0.820 0.918 0.985									
21)	acetone										
	0.033 0.051	0.036 0.037 0.038 0.034 0.037									
22)	allyl chloride										
	1.402 1.330	1.681 1.340 1.349 1.610 1.299 1.253 1.336									
23)	acetonitrile										

Initial Calibration Summary

Job Number: JC7897

Sample: VD9588-ICC9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234792.D

24)	acetaldehyde	0.045 0.051	0.042 0.042	0.041 0.041 0.042	0.043	8.28
					0.000#	-1.00
25)	iodomethane	0.981 0.963 0.981	1.068 1.119 1.038	1.076 0.936 1.052 1.053	1.027	5.70
26)	iso-butyl alcohol	0.008 0.005	0.007 0.007	0.007 0.006 0.007	0.007#	10.87
27)	carbon disulfide	2.030 1.842 1.909	2.164 2.166 2.056	2.053 1.819 2.063 2.434	2.054	8.76
28)	methylene chloride	0.598 0.571 0.660	0.603 0.630 0.624	0.600 0.553 0.616 0.709	0.616	7.18
29)	1-chloropropane	1.635	1.046 1.031	0.991 1.008 1.345	1.176	22.18
		----- Linear regression -----	Coefficient = 0.9996			
		Response Ratio = 0.05143 + 0.98320 *A				
30)	methyl acetate	0.069	0.065 0.064	0.066 0.065 0.054	0.064	7.79
31)	methyl tert butyl ether	1.881 1.688 2.057	1.819 1.864 2.164	1.781 1.681 1.867	1.867	8.49
32)	trans-1,2-dichloroethene	0.791 0.709 0.738	0.776 0.789 0.810	0.783 0.704 0.792 0.923	0.782	7.90
33)	di-isopropyl ether	1.696 1.622 1.845	1.774 1.828 1.801	1.726 1.718 1.603 1.908	1.752	5.58
34)	ethyl tert-butyl ether	1.758 1.729 1.873	1.922 1.983 1.753	1.887 1.813 1.708 1.829	1.826	4.94
35)	2-butanone	0.049	0.047 0.049	0.050 0.043 0.048	0.048	5.35
36)	1,1-dichloroethane	0.918 0.856 0.905	0.920 0.937 0.909	0.927 0.847 0.934 1.086	0.924	7.02
37)	chloroprene	0.643 0.624 0.559	0.692 0.695 0.644	0.698 0.672 0.652 0.582	0.646	7.32
38)	acrylonitrile	0.161 0.152 0.146	0.159 0.161 0.164	0.159 0.154 0.167	0.158	4.07
39)	vinyl acetate	0.073 0.052	0.088 0.091	0.091 0.090 0.078	0.081	17.86
40)	ethyl acetate	0.061	0.051 0.052	0.050 0.051 0.052	0.053	7.77
41)	2,2-dichloropropane	1.035 0.974 1.195	1.061 1.046 1.089	1.015 0.902 1.049 1.539	1.091	16.03
42)	cis-1,2-dichloroethene	0.611 0.611 0.875	0.559 0.563 0.744	0.570 0.512 0.595 0.556	0.620	17.53
43)	propionitrile	0.060 0.052 0.052	0.059 0.060 0.061	0.060 0.058 0.063 0.049	0.057	8.29
44)	methyl acrylate	0.050	0.058 0.060	0.060 0.052 0.055	0.056	7.31
45)	bromochloromethane	0.257 0.243 0.278	0.254 0.266 0.277	0.266 0.242 0.264 0.170	0.252	12.38
46)	tetrahydrofuran	0.058 0.048	0.054 0.056 0.042	0.057 0.050 0.054	0.052	10.16
47)	chloroform	0.888 0.824 0.897	0.873 0.886 0.935	0.894 0.804 0.884 0.946	0.883	4.89
48)	dibromofluoromethane (s)	0.464 0.463 0.467	0.452 0.461 0.459	0.463 0.457 0.459 0.460	0.461	0.93
49)	1,2-dichloroethane-d4 (s)	0.553 0.548 0.551	0.550 0.562 0.544	0.573 0.547 0.543 0.541	0.551	1.76
50)	freon 113	0.366 0.330	0.424 0.424 0.341	0.415 0.397 0.376	0.384	9.54
51)	methacrylonitrile	0.252 0.223 0.340	0.227 0.232 0.293	0.231 0.227 0.244	0.252	15.69

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Initial Calibration Summary

Job Number: JC7897

Sample: VD9588-ICC9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234792.D

52)	t-butyl formate	0.513 0.511 0.567 0.589 0.510 0.566 0.533 0.498	0.536	6.33
53)	1,1,1-trichloroethane	0.913 0.839 0.940 1.019 1.032 0.892 1.005 0.858 0.964 1.052 0.952	7.88	
54)	tert-amyl methyl ether	1.673 1.589 1.703 1.776 1.868 1.698 1.822 1.669 1.579 1.881 1.726	6.22	
55)	I 1,4-difluorobenzene	-----ISTD-----		
56)	cyclohexane	0.663 0.581 0.503 0.750 0.757 0.668 0.741 0.610 0.699 0.806 0.678	13.68	
57)	tert amyl alcohol		0.000#	-1.00
58)	2,2,4-trimethylpentane	1.273 1.128 1.562 1.638 1.307 1.564 1.412 1.289	1.397	12.73
59)	epichlorohydrin *This compound does not meet Initial Calibration criteria	0.033 0.028 0.034 0.036 0.031 0.034 0.033 0.033	0.033	7.61
60)	n-butyl alcohol	0.009 0.008 0.010 0.010 0.008 0.010 0.010 0.009	0.009#	9.20
61)	carbon tetrachloride	0.584 0.534 0.495 0.647 0.674 0.609 0.673 0.530 0.592 0.654	0.599	10.65
62)	1,1-dichloropropene	0.469 0.446 0.476 0.497 0.491 0.512 0.508 0.430 0.485 0.530	0.484	6.31
63)	hexane	0.404 0.363 0.418 0.424 0.449 0.408 0.413 0.397	0.410	6.00
64)	benzene	1.434 1.355 1.512 1.449 1.467 1.554 1.484 1.319 1.463 1.859	1.489	9.86
65)	heptane	0.227 0.214 0.163 0.244 0.246 0.279 0.233 0.237 0.222 0.213	0.228	13.06
66)	isopropyl acetate	0.779 0.791 0.775 0.899 0.921 0.847 0.897 0.816 0.766 1.223	0.872	15.59
67)	1,2-dichloroethane	0.494 0.457 0.498 0.500 0.510 0.516 0.519 0.476 0.513 0.593	0.508	7.03
68)	Ethyl Acrylate		0.000#	-1.00
69)	trichloroethene	0.355 0.333 0.383 0.368 0.370 0.363 0.381 0.331 0.374 0.428	0.369	7.42
70)	2-nitropropane	0.577 0.482 0.601 0.547 0.570 0.626 0.561 0.514 0.532	0.557	7.90
71)	2-chloroethyl vinyl ether	0.178 0.176 0.173 0.195 0.209 0.183 0.204 0.190 0.174 0.170	0.185	7.37
72)	methyl methacrylate	0.075 0.056 0.081 0.089	0.089 0.076 0.076	0.078 14.30
73)	tert-amyl ethyl ether		0.000#	-1.00
74)	1,2-dichloropropane	0.346 0.326 0.362 0.364 0.368 0.370 0.365 0.333 0.362 0.383	0.358	4.85
75)	methylcyclohexane	0.627 0.568 0.736 0.766 0.659 0.746 0.674 0.622	0.675	10.31
76)	dibromomethane	0.220 0.214 0.213 0.224 0.234 0.227 0.232 0.214 0.228 0.216	0.222	3.61
77)	bromodichloromethane	0.509 0.474 0.514 0.512 0.533 0.513 0.533 0.474 0.512 0.561	0.514	5.10
78)	cis-1,3-dichloropropene	0.581 0.538 0.614 0.599 0.621 0.631 0.610 0.560 0.590 0.670	0.601	6.22
79)	toluene-d8 (s)	1.255 1.255 1.266 1.296 1.344 1.262 1.300 1.273 1.260 1.256	1.277	2.25
80)	4-methyl-2-pentanone	0.118 0.110 0.127 0.137	0.135 0.118 0.123	0.124 7.91
81)	toluene	0.858 0.794 0.902 0.913 0.958 0.892 0.941 0.820 0.900 1.024	0.900	7.42

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Initial Calibration Summary

Job Number: JC7897

Sample: VD9588-ICC9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234792.D

82)	3-methyl-1-butanol	0.009 0.008 0.010 0.011 0.011 0.010 0.009	0.010#	11.59
83)	trans-1,3-dichloropropene	0.542 0.502 0.602 0.552 0.589 0.588 0.574 0.519 0.550 0.594 0.561 6.03		
84)	ethyl methacrylate	0.417 0.368 0.395 0.431 0.473 0.431 0.459 0.401 0.416 0.288 0.408 12.74		
85)	1,1,2-trichloroethane	0.244 0.225 0.228 0.248 0.268 0.261 0.261 0.233 0.248 0.303 0.252 9.09		
86)	2-hexanone	0.118 0.105 0.116 0.130 0.101 0.126 0.112 0.112	0.115	8.60
87)	I chlorobenzene-d5	-----ISTD-----		
88)	tetrachloroethene	0.385 0.372 0.388 0.415 0.405 0.387 0.416 0.364 0.398 0.498 0.403 9.31		
89)	1,3-dichloropropane	0.531 0.496 0.473 0.536 0.535 0.506 0.528 0.510 0.547 0.581 0.524 5.72		
90)	butyl acetate	0.205 0.218 0.238 0.213 0.218 0.233 0.212 0.213 0.204 0.207 0.216 5.23		
91)	3,3-dimethyl-1-butanol	0.037 0.034 0.036 0.042 0.042 0.038 0.044 0.041 0.038 0.037 0.039 8.48		
92)	dibromochloromethane	0.375 0.335 0.340 0.390 0.400 0.391 0.407 0.365 0.382 0.413 0.380 6.94		
93)	1,2-dibromoethane	0.335 0.302 0.340 0.322 0.333 0.351 0.329 0.305 0.333 0.386 0.334 7.03		
94)	chlorobenzene	1.059 0.980 1.023 1.051 1.068 1.072 1.070 0.967 1.068 1.184 1.054 5.66		
95)	1,1,1,2-tetrachloroethane	0.452 0.418 0.390 0.477 0.475 0.473 0.497 0.435 0.465 0.462 0.454 7.00		
96)	ethylbenzene	1.896 1.731 1.943 1.900 1.918 1.913 1.901 1.727 1.906 2.344 1.918 8.77		
97)	m,p-xylene	0.694 0.644 0.694 0.731 0.742 0.712 0.761 0.655 0.729 0.757 0.712 5.63		
98)	o-xylene	0.733 0.686 0.734 0.775 0.787 0.752 0.809 0.712 0.759 0.823 0.757 5.63		
99)	styrene	1.177 1.075 1.114 1.220 1.284 1.143 1.311 1.116 1.203 1.262 1.190 6.66		
100)	bromoform	0.274 0.230 0.265 0.287 0.304 0.253 0.317 0.261 0.282 0.223 0.270 11.00		
101)	I 1,4-dichlorobenzene-d	-----ISTD-----		
102)	isopropylbenzene	3.360 3.122 3.364 3.550 3.522 3.468 3.374 3.180 3.466 3.804 3.421 5.63		
103)	4-bromofluorobenzene (s)	0.950 0.961 0.964 0.905 0.932 0.974 0.896 0.936 0.939 0.953 0.941 2.68		
104)	bromobenzene	0.864 0.812 0.818 0.829 0.883 0.922 0.896 0.780 0.847 0.771 0.842 5.90		
105)	cyclohexanone	0.040 0.042 0.037 0.036 0.031 0.038 0.040	0.038	9.42
106)	1,1,2,2-tetrachloroethane	0.846 0.767 0.850 0.803 0.801 0.903 0.763 0.792 0.845 0.879 0.825 5.70		
107)	trans-1,4-dichloro-2-butene	0.267 0.272 0.273 0.249 0.252 0.296 0.239 0.245 0.265 0.300 0.266 7.78		
108)	1,2,3-trichloropropane	0.232 0.220 0.176 0.223 0.234 0.254 0.231 0.223 0.239 0.162 0.219 12.99		
109)	n-propylbenzene	3.906 3.630 3.935 3.904 3.926 4.198 3.725 3.588 3.986 5.133 3.993 10.99		
110)	p-ethyltoluene		0.000#	-1.00
111)	2-chlorotoluene	0.813 0.749 0.855 0.830 0.864 0.901 0.880 0.762 0.838	0.832	6.13

Initial Calibration Summary

Job Number: JC7897

Sample: VD9588-ICC9588

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: D234792.D

Project: Sunoco - Marcus Hook Facility, PA

112)	4-chlorotoluene	2.486 2.324 2.934 2.384 2.473 2.789 2.401 2.272 2.460 3.480 2.600 14.28
113)	1,3,5-trimethylbenzene	3.002 2.801 2.949 3.189 3.195 3.219 3.161 2.891 3.115 3.445 3.097 6.08
114)	tert-butylbenzene	2.467 2.243 2.508 2.709 2.585 2.591 2.662 2.367 2.522 3.313 2.597 11.03
115)	pentachloroethane	0.581 0.559 0.606 0.633 0.634 0.584 0.676 0.569 0.586 0.606 0.603 5.89
116)	1,2,4-trimethylbenzene	3.044 2.795 3.105 3.166 3.175 3.176 3.111 2.887 3.109 3.727 3.130 7.84
117)	sec-butylbenzene	3.935 3.598 3.843 4.340 4.175 4.105 4.075 3.819 4.097 4.748 4.073 7.76
118)	1,3-dichlorobenzene	1.778 1.625 1.762 1.762 1.796 1.825 1.808 1.640 1.798 2.153 1.795 7.98
119)	p-isopropyltoluene	3.353 2.986 3.217 3.590 3.515 3.447 3.488 3.136 3.400 4.143 3.427 9.13
120)	1,4-dichlorobenzene	1.781 1.681 1.898 1.792 1.820 1.907 1.828 1.666 1.837 1.801 4.65
121)	1,2,3-trimethylbenzene	0.000# -1.00
122)	Benzyl Chloride	1.854 1.782 2.238 1.783 1.773 1.925 1.679 1.821 1.747 1.845 8.82
123)	p-diethylbenzene	0.000# -1.00
124)	INDANE	0.000# -1.00
125)	1,2-dichlorobenzene	1.781 1.623 1.652 1.807 1.808 1.820 1.789 1.692 1.834 2.081 1.789 7.10
126)	n-butylbenzene	1.736 1.564 1.682 1.859 1.827 1.800 1.805 1.637 1.786 1.964 1.766 6.54
127)	1,2,4,5-tetramethylbenzene	0.000# -1.00
128)	1,2-dibromo-3-chloropropane	0.180 0.179 0.177 0.208 0.202 0.185 0.201 0.194 0.199 0.235 0.196 8.99
129)	1,3,5-trichlorobenzene	1.448 1.289 1.405 1.688 1.632 1.372 1.639 1.463 1.537 1.649 1.512 9.03
130)	1,2,4-trichlorobenzene	1.111 0.936 1.023 1.414 1.350 1.008 1.377 1.189 1.157 1.305 1.187 14.22
131)	hexachlorobutadiene	0.621 0.564 0.585 0.724 0.679 0.634 0.688 0.598 0.632 0.715 0.644 8.58
132)	naphthalene	2.187 1.840 2.816 2.726 1.965 2.662 2.432 2.332 2.370 15.08
133)	1,2,3-trichlorobenzene	0.892 0.792 0.877 1.171 1.139 0.884 1.149 0.998 0.962 1.144 1.001 14.01
134)	hexachloroethane	0.604 0.581 0.664 0.667 0.642 0.675 0.699 0.596 0.617 0.638 6.37

(#) = Out of Range ### = Number of calibration levels exceeded format ###

MD9588.M Mon Oct 19 09:22:26 2015 RPT1

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Initial Calibration Verification

Job Number: JC7897

Sample: VD9588-ICV9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234797.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\d234797.D Vial: 14
 Acq On : 15 Oct 2015 6:02 pm Operator: BenM
 Sample : icv9588-50 Inst : MSD
 Misc : ms92609, vd9588, 5.0,,100,5,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)
 Title : SW-846 Method 8260C
 Last Update : Mon Oct 19 09:20:02 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	101	0.00	
2 M	1,4-dioxane	0.099	0.109	-10.1	107	0.00	
3 M	tertiary butyl alcohol	1.132	1.194	-5.5	107	0.00	
4 I	pentafluorobenzene	1.000	1.000	0.0	106	0.00	
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----			
6 M	chlorodifluoromethane	0.783	0.756	3.4	95	0.01	
7 M	dichlorodifluoromethane	1.042	1.035	0.7	102	0.00	
8 M	chloromethane	0.883	0.854	3.3	105	0.01	
9	1,3-butadiene			-----NA-----			
10 M	vinyl chloride	0.949	0.938	1.2	101	0.00	
11 M	bromomethane	0.686	0.721	-5.1	111	0.00	
12 M	chloroethane	0.490	0.487	0.6	108	0.00	
13 M	vinyl bromide			-----NA-----			
14 M	trichlorofluoromethane	1.093	1.120	-2.5	105	0.00	
15	pentane			-----NA-----			
16 M	ethyl ether	0.258	0.243	5.8	103	0.00	
17 M	acrolein	0.099	0.105	-6.1	116	0.00	
18 M	chlorotrifluoroethene			-----NA-----			
19 M	2-chloropropane	1.137	1.025	9.9	98	0.00	
20 M	1,1-dichloroethene	0.906	0.876	3.3	97	0.00	
21 M	acetone	0.038	0.037	2.6	109	-0.01	
22 M	allyl chloride	1.400	1.355	3.2	107	0.00	
23 M	acetonitrile	0.043	0.042	2.3	106	0.00	
24 M	acetaldehyde			-----NA-----			
25 M	iodomethane	1.027	1.007	1.9	100	0.00	
26 M	iso-butyl alcohol	0.007	0.005#	28.6	82	0.00	
27 M	carbon disulfide	2.054	1.984	3.4	97	0.00	
28 M	methylene chloride	0.616	0.583	5.4	103	0.00	
29 M	1-chloropropane	50.000	44.905	10.2	95	0.00	
30 M	methyl acetate	0.064	0.064	0.0	104	0.00	
31 M	methyl tert butyl ether	1.867	1.724	7.7	101	0.00	
32 M	trans-1,2-dichloroethene	0.782	0.720	7.9	99	0.00	
33 M	di-isopropyl ether	1.752	1.766	-0.8	106	0.00	
34 M	ethyl tert-butyl ether	1.826	1.888	-3.4	104	0.00	
35 M	2-butanone	0.048	0.048	0.0	109	0.00	
36 M	1,1-dichloroethane	0.924	0.888	3.9	102	0.00	
37 M	chloroprene	0.646	0.673	-4.2	103	0.00	

Initial Calibration Verification

Job Number: JC7897

Sample: VD9588-ICV9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234797.D

38 M	acrylonitrile	0.158	0.159	-0.6	106	0.00	8.33
39 M	vinyl acetate	0.081	0.087	-7.4	104	0.00	8.88
40 M	ethyl acetate	0.053	0.059	-11.3	122	0.00	9.61
41 M	2,2-dichloropropane	1.091	1.003	8.1	100	0.00	9.65
42 M	cis-1,2-dichloroethene	0.620	0.521	16.0	99	0.00	9.65
43 M	propionitrile	0.057	0.059	-3.5	105	0.00	9.76
44	methyl acrylate	0.056	0.058	-3.6	108	0.00	9.70
45 M	bromochloromethane	0.252	0.245	2.8	102	0.00	9.97
46 M	tetrahydrofuran	0.052	0.056	-7.7	109	0.00	10.00
47 M	chloroform	0.883	0.841	4.8	102	0.00	10.02
48 S	dibromofluoromethane (s)	0.461	0.450	2.4	106	0.00	10.22
49 S	1,2-dichloroethane-d4 (s)	0.551	0.536	2.7	103	0.00	10.65
50 M	freon 113	0.384	0.467	-21.6	117	0.00	7.18
51 M	methacrylonitrile	0.252	0.228	9.5	106	0.00	9.92
52 m	t-butyl formate	0.536	0.617	-15.1	115	0.00	10.04
53 M	1,1,1-trichloroethane	0.952	0.954	-0.2	99	0.00	10.26
54 M	tert-amyl methyl ether	1.726	1.770	-2.5	106	0.00	10.70
55 I	1,4-difluorobenzene	1.000	1.000	0.0	105	0.00	11.06
56 M	cyclohexane	0.678	0.689	-1.6	96	0.00	10.31
57	tert amyl alcohol			-----NA-----			
58 M	2,2,4-trimethylpentane	1.397	1.489	-6.6	100	0.00	10.65
59 M	epichlorohydrin			-----NA-----			
60 M	n-butyl alcohol	0.009	0.010#	-11.1	104	0.00	11.21
61 M	carbon tetrachloride	0.599	0.616	-2.8	100	0.00	10.45
62 M	1,1-dichloropropene	0.484	0.480	0.8	101	0.00	10.42
63 M	hexane	0.410	0.312	23.9	78	0.00	8.59
64 M	benzene	1.489	1.399	6.0	101	0.00	10.70
65 M	heptane	0.228	0.244	-7.0	105	0.00	10.80
66 M	isopropyl acetate	0.872	0.867	0.6	101	0.00	10.60
67 M	1,2-dichloroethane	0.508	0.496	2.4	104	0.00	10.74
68	Ethyl Acrylate			-----NA-----			
69 M	trichloroethene	0.369	0.350	5.1	100	0.00	11.40
70 M	2-nitropropane	0.557	0.594	-6.6	114	0.00	11.67
71 M	2-chloroethyl vinyl ether	0.185	0.227	-22.7	122	0.00	12.22
72 M	methyl methacrylate	0.078	0.091	-16.7	118	0.00	11.67
73 M	tert-amyl ethyl ether			-----NA-----			
74 M	1,2-dichloropropane	0.358	0.368	-2.8	106	0.00	11.69
75 M	methylcyclohexane	0.675	0.719	-6.5	102	0.00	11.60
76 M	dibromomethane	0.222	0.222	0.0	104	0.00	11.87
77 M	bromodichloromethane	0.514	0.503	2.1	103	0.00	11.99
78 M	cis-1,3-dichloropropene	0.601	0.614	-2.2	107	0.00	12.46
79 S	toluene-d8 (s)	1.277	1.355	-6.1	110	0.00	12.75
80 M	4-methyl-2-pentanone	0.124	0.144	-16.1	119	0.00	12.55
81 M	toluene	0.900	0.932	-3.6	107	0.00	12.83
82 M	3-methyl-1-butanol	0.010	0.016	-60.0#	163	0.00	12.57
83 M	trans-1,3-dichloropropene	0.561	0.592	-5.5	112	0.00	13.05
84 M	ethyl methacrylate	0.408	0.500	-22.5	122	0.00	13.01
85 M	1,1,2-trichloroethane	0.252	0.276	-9.5	117	0.00	13.29
86 M	2-hexanone	0.115	0.144	-25.2	130	0.00	13.46
87 I	chlorobenzene-d5	1.000	1.000	0.0	122	0.00	14.40
88 M	tetrachloroethene	0.403	0.365	9.4	108	0.00	13.44
89 M	1,3-dichloropropane	0.524	0.515	1.7	117	0.00	13.49
90 M	butyl acetate	0.216	0.236	-9.3	135	0.00	13.51
91 m	3,3-dimethyl-1-butanol	0.039	0.036	7.7	106	0.00	13.64
92 M	dibromochloromethane	0.380	0.368	3.2	115	0.00	13.78
93 M	1,2-dibromoethane	0.334	0.321	3.9	122	0.00	13.95
94 M	chlorobenzene	1.054	1.039	1.4	121	0.00	14.43
95 M	1,1,1,2-tetrachloroethane	0.454	0.395	13.0	101	0.00	14.50

Initial Calibration Verification

Job Number: JC7897

Sample: VD9588-ICV9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234797.D

96 M	ethylbenzene	1.918	1.820	5.1	117	0.00	14.47
97 M	m,p-xylene	0.712	0.704	1.1	118	0.00	14.58
98 M	o-xylene	0.757	0.723	4.5	114	0.00	15.06
99 M	styrene	1.190	1.262	-6.1	127	0.00	15.07
100 M	bromoform	0.270	0.296	-9.6	126	0.00	15.41
101 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	122	0.00	16.97
102 M	isopropylbenzene	3.421	3.121	8.8	107	0.00	15.43
103 S	4-bromofluorobenzene (s)	0.941	0.967	-2.8	130	0.00	15.68
104 M	bromobenzene	0.842	0.862	-2.4	127	0.00	15.90
105 M	cyclohexanone	0.038	0.033	13.2	106	0.00	15.67
106 M	1,1,2,2-tetrachloroethane	0.825	0.747	9.5	113	0.00	15.81
107 M	trans-1,4-dichloro-2-bute	0.266	0.258	3.0	126	0.00	15.84
108 M	1,2,3-trichloropropane	0.219	0.220	-0.5	120	0.00	15.89
109 M	n-propylbenzene	3.993	3.963	0.8	124	0.00	15.88
110 M	p-ethyltoluene			-----NA-----			
111 M	2-chlorotoluene	0.832	0.795	4.4	117	0.00	16.06
112 M	4-chlorotoluene	2.600	2.449	5.8	125	0.00	16.17
113 M	1,3,5-trimethylbenzene	3.097	2.834	8.5	108	0.00	16.04
114 M	tert-butylbenzene	2.597	2.193	15.6	98	0.00	16.44
115 M	pentachloroethane	0.603	0.538	10.8	103	0.00	16.56
116 M	1,2,4-trimethylbenzene	3.130	3.018	3.6	116	0.00	16.49
117 M	sec-butylbenzene	4.073	3.671	9.9	103	0.00	16.67
118 M	1,3-dichlorobenzene	1.795	1.709	4.8	118	0.00	16.91
119 M	p-isopropyltoluene	3.427	3.197	6.7	108	0.00	16.80
120 M	1,4-dichlorobenzene	1.801	1.754	2.6	119	0.00	17.00
121	1,2,3-trimethylbenzene			-----NA-----			
122	Benzyl Chloride	1.845	1.739	5.7	119	0.00	17.14
123 M	p-diethylbenzene			-----NA-----			
124	INDANE			-----NA-----			
125 M	1,2-dichlorobenzene	1.789	1.676	6.3	113	0.00	17.45
126 M	n-butylbenzene	1.766	1.725	2.3	113	0.00	17.26
127 M	1,2,4,5-tetramethylbenzen			-----NA-----			
128 M	1,2-dibromo-3-chloropropane	0.196	0.175	10.7	102	0.00	18.32
129 M	1,3,5-trichlorobenzene	1.512	1.384	8.5	100	0.00	18.49
130 M	1,2,4-trichlorobenzene	1.187	1.140	4.0	98	0.00	19.23
131 M	hexachlorobutadiene	0.644	0.570	11.5	96	0.00	19.33
132 M	naphthalene	2.370	2.209	6.8	95	0.00	19.56
133 M	1,2,3-trichlorobenzene	1.001	0.935	6.6	97	0.00	19.84
134 M	hexachloroethane	0.638	0.539	15.5	98	0.00	17.71

(#) = Out of Range
d234792.D MD9588.MSPCC's out = 0 CCC's out = 0
Mon Oct 19 09:22:02 2015 RPT1

Continuing Calibration Summary

Job Number: JC7897

Sample: VD9625-CC9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D235745A.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\D\vd9624-9625\d235745a.D Vial: 27
 Acq On : 12 Nov 2015 12:04 am Operator: BenM
 Sample : cc9588-50 Inst : MSD
 Misc : ms93980, vd9625, 5,,100,5,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)
 Title : SW-846 Method 8260C
 Last Update : Mon Oct 19 11:56:02 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	97	-0.01	
2 M	1,4-dioxane	0.099	0.101	-2.0	96	0.00	
3 M	tertiary butyl alcohol	1.132	1.134	-0.2	98	-0.03	
4 I	pentafluorobenzene	1.000	1.000	0.0	102	0.00	
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----			
6 M	chlorodifluoromethane	0.783	0.892	-13.9	108	0.02	
7 M	dichlorodifluoromethane	1.042	1.016	2.5	96	0.01	
8 M	chloromethane	0.883	1.139	-29.0#	135	0.03	
9	1,3-butadiene			-----NA-----			
10 M	vinyl chloride	0.949	1.133	-19.4	117	0.02	
11 M	bromomethane	0.686	0.598	12.8	89	0.02	
12 M	chloroethane	0.490	0.519	-5.9	111	0.00	
13 M	vinyl bromide			-----NA-----			
14 M	trichlorofluoromethane	1.093	0.980	10.3	89	0.00	
15	pentane			-----NA-----			
16 M	ethyl ether	0.258	0.276	-7.0	113	0.00	
17 M	acrolein	0.099	0.102	-3.0	108	0.00	
18 M	chlorotrifluoroethene			-----NA-----			
19 M	2-chloropropane	1.137	1.241	-9.1	115	0.00	
20 M	1,1-dichloroethene	0.906	0.976	-7.7	105	0.00	
21 M	acetone	0.038	0.039	-2.6	111	-0.01	
22 M	allyl chloride	1.400	1.566	-11.9	119	0.00	
23 M	acetonitrile	0.043	0.046	-7.0	113	-0.01	
24 M	acetaldehyde			-----NA-----			
25 M	iodomethane	1.027	1.032	-0.5	99	0.00	
26 M	iso-butyl alcohol	0.007	0.007#	0.0	103	0.00	
27 M	carbon disulfide	2.054	2.282	-11.1	108	0.00	
28 M	methylene chloride	0.616	0.636	-3.2	108	0.00	
29 M	1-chloropropane	50.000	55.038	-10.1	111	0.00	
30 M	methyl acetate	0.064	0.061	4.7	96	0.00	
31 M	methyl tert butyl ether	1.867	1.795	3.9	101	0.00	
32 M	trans-1,2-dichloroethene	0.782	0.836	-6.9	110	0.00	
33 M	di-isopropyl ether	1.752	1.968	-12.3	113	0.00	
34 M	ethyl tert-butyl ether	1.826	1.900	-4.1	101	0.00	
35 M	2-butanone	0.048	0.047	2.1	101	0.00	
36 M	1,1-dichloroethane	0.924	0.992	-7.4	110	0.00	
37 M	chloroprene	0.646	0.760	-17.6	112	0.00	

Continuing Calibration Summary

Job Number: JC7897

Sample: VD9625-CC9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D235745A.D

38 M	acrylonitrile	0.158	0.175	-10.8	112	0.00	8.33
39 M	vinyl acetate	0.081	0.080	1.2	93	0.00	8.88
40 M	ethyl acetate	0.053	0.053	0.0	106	0.00	9.61
41 M	2,2-dichloropropane	1.091	1.007	7.7	97	0.00	9.65
42 M	cis-1,2-dichloroethene	0.620	0.590	4.8	108	0.00	9.65
43 M	propionitrile	0.057	0.067	-17.5	115	0.00	9.75
44	methyl acrylate	0.056	0.058	-3.6	102	0.00	9.69
45 M	bromochloromethane	0.252	0.257	-2.0	103	0.00	9.97
46 M	tetrahydrofuran	0.052	0.056	-7.7	106	0.00	10.00
47 M	chloroform	0.883	0.890	-0.8	104	0.00	10.01
48 S	dibromofluoromethane (s)	0.461	0.450	2.4	102	0.00	10.22
49 S	1,2-dichloroethane-d4 (s)	0.551	0.514	6.7	96	0.00	10.64
50 M	freon 113	0.384	0.410	-6.8	99	0.00	7.18
51 M	methacrylonitrile	0.252	0.257	-2.0	115	0.00	9.92
52 m	t-butyl formate	0.536	0.522	2.6	94	0.00	10.03
53 M	1,1,1-trichloroethane	0.952	0.940	1.3	94	0.00	10.25
54 M	tert-amyl methyl ether	1.726	1.742	-0.9	100	0.00	10.69
55 I	1,4-difluorobenzene	1.000	1.000	0.0	104	0.00	11.05
56 M	cyclohexane	0.678	0.726	-7.1	101	0.00	10.31
57	tert amyl alcohol			-----NA-----			
58 M	2,2,4-trimethylpentane	1.397	1.169	16.3	78	-0.01	10.64
59 M	epichlorohydrin	0.033	0.032	3.0	98	0.00	12.37
60 M	n-butyl alcohol	0.009	0.011	-22.2#	111	-0.01	11.20
61 M	carbon tetrachloride	0.599	0.570	4.8	92	0.00	10.45
62 M	1,1-dichloropropene	0.484	0.505	-4.3	106	0.00	10.42
63 M	hexane	0.410	0.371	9.5	92	0.00	8.58
64 M	benzene	1.489	1.542	-3.6	111	0.00	10.69
65 M	heptane	0.228	0.189	17.1	81	0.00	10.80
66 M	isopropyl acetate	0.872	0.790	9.4	92	0.00	10.59
67 M	1,2-dichloroethane	0.508	0.469	7.7	98	0.00	10.73
68	Ethyl Acrylate			-----NA-----			
69 M	trichloroethene	0.369	0.370	-0.3	105	0.00	11.40
70 M	2-nitropropane	0.557	0.549	1.4	105	0.00	11.66
71 M	2-chloroethyl vinyl ether	0.185	0.183	1.1	98	0.00	12.21
72 M	methyl methacrylate	0.078	0.076	2.6	98	0.00	11.66
73 M	tert-amyl ethyl ether			-----NA-----			
74 M	1,2-dichloropropane	0.358	0.387	-8.1	111	0.00	11.69
75 M	methylcyclohexane	0.675	0.636	5.8	90	0.00	11.60
76 M	dibromomethane	0.222	0.210	5.4	98	0.00	11.86
77 M	bromodichloromethane	0.514	0.502	2.3	102	0.00	11.98
78 M	cis-1,3-dichloropropene	0.601	0.590	1.8	103	0.00	12.45
79 S	toluene-d8 (s)	1.277	1.291	-1.1	104	0.00	12.74
80 M	4-methyl-2-pentanone	0.124	0.135	-8.9	111	0.00	12.54
81 M	toluene	0.900	0.919	-2.1	105	0.00	12.82
82 M	3-methyl-1-butanol	0.010	0.010	0.0	103	-0.01	12.57
83 M	trans-1,3-dichloropropene	0.561	0.523	6.8	99	0.00	13.05
84 M	ethyl methacrylate	0.408	0.426	-4.4	103	0.00	13.00
85 M	1,1,2-trichloroethane	0.252	0.245	2.8	103	0.00	13.29
86 M	2-hexanone	0.115	0.118	-2.6	106	0.00	13.45
87 I	chlorobenzene-d5	1.000	1.000	0.0	101	0.00	14.39
88 M	tetrachloroethene	0.403	0.392	2.7	95	0.00	13.44
89 M	1,3-dichloropropane	0.524	0.540	-3.1	101	-0.01	13.48
90 M	butyl acetate	0.216	0.218	-0.9	103	0.00	13.50
91 m	3,3-dimethyl-1-butanol	0.039	0.043	-10.3	103	0.00	13.64
92 M	dibromochloromethane	0.380	0.372	2.1	96	0.00	13.77
93 M	1,2-dibromoethane	0.334	0.307	8.1	96	-0.01	13.94
94 M	chlorobenzene	1.054	1.039	1.4	100	0.00	14.42
95 M	1,1,1,2-tetrachloroethane	0.454	0.464	-2.2	98	0.00	14.49

Continuing Calibration Summary

Job Number: JC7897

Sample: VD9625-CC9588

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D235745A.D

96 M	ethylbenzene	1.918	1.937	-1.0	103	0.00	14.46
97 M	m,p-xylene	0.712	0.739	-3.8	102	0.00	14.58
98 M	o-xylene	0.757	0.802	-5.9	104	0.00	15.05
99 M	styrene	1.190	1.216	-2.2	100	0.00	15.07
100 M	bromoform	0.270	0.258	4.4	91	0.00	15.39
101 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	97	-0.01	16.96
102 M	isopropylbenzene	3.421	3.651	-6.7	100	0.00	15.42
103 S	4-bromofluorobenzene (s)	0.941	0.946	-0.5	102	-0.01	15.67
104 M	bromobenzene	0.842	0.823	2.3	97	-0.01	15.89
105 M	cyclohexanone	0.038	0.024	36.8#	63	-0.01	15.66
106 M	1,1,2,2-tetrachloroethane	0.825	0.835	-1.2	101	0.00	15.80
107 M	trans-1,4-dichloro-2-bute	0.266	0.239	10.2	94	0.00	15.84
108 M	1,2,3-trichloropropane	0.219	0.215	1.8	94	0.00	15.89
109 M	n-propylbenzene	3.993	3.956	0.9	99	-0.01	15.87
110 M	p-ethyltoluene			-----NA-----			
111 M	2-chlorotoluene	0.832	0.824	1.0	97	0.00	16.06
112 M	4-chlorotoluene	2.600	2.528	2.8	103	0.00	16.17
113 M	1,3,5-trimethylbenzene	3.097	3.233	-4.4	99	0.00	16.03
114 M	tert-butylbenzene	2.597	2.636	-1.5	95	-0.01	16.43
115 M	pentachloroethane	0.603	0.650	-7.8	100	0.00	16.55
116 M	1,2,4-trimethylbenzene	3.130	3.215	-2.7	99	0.00	16.48
117 M	sec-butylbenzene	4.073	4.052	0.5	91	0.00	16.67
118 M	1,3-dichlorobenzene	1.795	1.737	3.2	96	0.00	16.90
119 M	p-isopropyltoluene	3.427	3.368	1.7	91	0.00	16.79
120 M	1,4-dichlorobenzene	1.801	1.748	2.9	95	0.00	17.00
121	1,2,3-trimethylbenzene			-----NA-----			
122	Benzyl Chloride	1.845	1.795	2.7	98	0.00	17.13
123 M	p-diethylbenzene			-----NA-----			
124	INDANE			-----NA-----			
125 M	1,2-dichlorobenzene	1.789	1.788	0.1	96	0.00	17.44
126 M	n-butylbenzene	1.766	1.695	4.0	89	0.00	17.25
127 M	1,2,4,5-tetramethylbenzen			-----NA-----			
128 M	1,2-dibromo-3-chloropropane	0.196	0.178	9.2	83	0.00	18.31
129 M	1,3,5-trichlorobenzene	1.512	1.429	5.5	82	0.00	18.48
130 M	1,2,4-trichlorobenzene	1.187	1.187	0.0	82	0.00	19.22
131 M	hexachlorobutadiene	0.644	0.557	13.5	75	0.00	19.32
132 M	naphthalene	2.370	2.437	-2.8	84	0.00	19.55
133 M	1,2,3-trichlorobenzene	1.001	0.906	9.5	75	0.00	19.83
134 M	hexachloroethane	0.638	0.633	0.8	92	0.00	17.71
<hr/>							
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(#= Out of Range
d234792.D MD9588.MSPCC's out = 0 CCC's out = 0
Thu Nov 12 07:46:00 2015 T

Initial Calibration Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PASample: VV6633-ICC6633
Lab FileID: V156935.D

Response Factor Report MSV

Method : C:\MSDCHEM\1\METHODS\MVS6633.M (RTE Integrator)

Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um

Last Update : Thu Oct 29 11:45:05 2015

Response via : Initial Calibration

Calibration Files

1	=V156930.D	4	=V156932.D	100	=V156936.D	50	=V156935.D
20	=V156934.D	200	=V156937.D	8	=V156933.D	0.5	=V156929.D
2	=V156931.D		=				

Compound

	1	4	100	50	20	200	8	0.5	2	Avg	%RSD
--	---	---	-----	----	----	-----	---	-----	---	-----	------

1) I	Tert Butyl Alcohol-d9	-----ISTD-----																	
2)	tertiary butyl alcohol																		
		1.553	1.256	1.245	1.232	1.225	1.194	1.205	1.357	1.284	9.33								
3)	1,4-dioxane																		
		0.057	0.098	0.105	0.099	0.097	0.096	0.096	0.088	0.092	16.30								
4) I	pentafluorobenzene	-----ISTD-----																	
5)	propene									0.000	-1.00								
6)	chlorodifluoromethane	**This compound does not meet initial calibration criteria								0.823	0.711	0.691	0.696	0.688	0.698	0.667	0.817	0.724	8.37
7)	dichlorodifluoromethane									0.849	0.798	0.780	0.829	0.767	0.828	0.825	0.811	3.69	
8)	chloromethane									0.753	0.762	0.729	0.717	0.771	0.737	0.791	0.751	3.43	
9)	vinyl chloride									0.758	0.787	0.756	0.743	0.786	0.764	0.794	0.770	2.50	
10)	1,3-butadiene															0.000	-1.00		
11)	bromomethane									0.462	0.454	0.451	0.416	0.431	0.431	0.428	0.439	3.81	
12)	chloroethane									0.377	0.351	0.347	0.335	0.347	0.349	0.359	0.352	3.72	
13)	trichlorofluoromethane									0.776	0.784	0.767	0.774	0.748	0.785	0.770	0.772	1.63	
14)	vinyl bromide															0.000	-1.00		
15)	ethyl ether									0.220	0.218	0.204	0.208	0.207	0.209	0.206	0.220	0.211	3.25
16)	2-chloropropane									0.822	0.806	0.806	0.805	0.806	0.829	0.946	0.831	6.18	
17)	acrolein									0.078	0.072	0.070	0.070	0.073	0.069	0.070	0.072	4.54	
18)	freon 113									0.363	0.349	0.342	0.361	0.347	0.340	0.384	0.355	4.29	
19)	1,1-dichloroethene									0.734	0.692	0.669	0.656	0.652	0.655	0.677	0.668	4.01	
20)	acetone									0.030	0.031	0.033	0.031	0.040		0.033	12.60		
21)	iso-butyl alcohol									0.014	0.015	0.014	0.014	0.015	0.013	0.015	0.014	3.39	
22)	allyl chloride									0.246	0.230	0.249	0.242	0.234	0.215	0.226	0.235	5.17	
23)	acetonitrile																		

Initial Calibration Summary

Job Number: JC7897

Sample: VV6633-ICC6633

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V156935.D

	0.118 0.108 0.109 0.107 0.110 0.109	0.118	0.111	4.13
24)	iodomethane 0.925 0.888 0.890 0.892 0.850 0.862 0.906	0.842	0.882	3.20
25)	carbon disulfide 1.786 1.734 1.695 1.658 1.664 1.634 1.769	1.680	1.702	3.21
26)	methylene chloride 0.688 0.529 0.476 0.478 0.477 0.464 0.507	0.602	0.527	14.91
27)	1-chloropropane 0.895 0.753 0.749 0.776 0.741 0.849	0.794	8.00	
28)	methyl acetate 0.232 0.227 0.235 0.236 0.242 0.243	0.236	2.60	
29)	methyl tert butyl ether 1.686 1.461 1.426 1.435 1.409 1.481 1.377 1.650 1.387	1.479	7.59	
30)	trans-1,2-dichloroethene 0.684 0.689 0.631 0.622 0.639 0.608 0.646 0.627 0.629	0.642	4.28	
31)	di-isopropyl ether 1.560 1.561 1.552 1.504 1.482 1.540 1.461	1.531	1.524	2.46
32)	2-butanone 0.043 0.040 0.039 0.039 0.043 0.035	0.042	0.040	6.80
33)	1,1-dichloroethane 0.741 0.803 0.776 0.759 0.745 0.754 0.783 0.837 0.736	0.771	4.31	
34)	chloroprene 0.636 0.584 0.601 0.572 0.563 0.584 0.575	0.634	0.594	4.70
35)	acrylonitrile 0.134 0.120 0.117 0.120 0.126 0.116	0.125	0.123	5.05
36)	vinyl acetate 0.063 0.061 0.060 0.065 0.059	0.061	4.31	
37)	ethyl tert-butyl ether 1.454 1.503 1.529 1.517 1.451 1.580 1.401	1.499	1.492	3.71
38)	ethyl acetate 0.051 0.040 0.041 0.045 0.044 0.042	0.049	0.045	9.36
39)	2,2-dichloropropane 0.894 0.833 0.765 0.757 0.774 0.767 0.793	0.847	0.804	6.12
40)	cis-1,2-dichloroethene 0.704 0.499 0.479 0.472 0.467 0.476 0.487	0.423	0.501	16.95
41)	propionitrile 0.048 0.046 0.045 0.047 0.051 0.044	0.042	0.046	6.17
42)	methyl acrylate 0.046 0.046 0.044 0.047 0.051 0.042	0.034	0.044	11.82
43)	methacrylonitrile 0.130 0.124 0.128 0.132 0.138 0.117	0.131	0.128	5.14
44)	bromochloromethane 0.239 0.215 0.221 0.224 0.222 0.225 0.213 0.215 0.223	0.222	3.51	
45)	tetrahydrofuran 0.142 0.117 0.116 0.116 0.127 0.125	0.152	0.128	11.17
46)	chloroform 0.788 0.773 0.740 0.739 0.732 0.744 0.751 0.781 0.770	0.758	2.71	
47)	tert-Butyl Formate 0.325 0.320 0.354 0.350 0.328 0.387 0.312	0.336	0.339	7.12
48)	dibromofluoromethane (s) 0.400 0.399 0.404 0.394 0.388 0.398 0.395 0.397 0.398	0.397	1.09	
49)	1,2-dichloroethane-d4 (s) 0.386 0.390 0.402 0.385 0.388 0.424 0.383 0.382 0.393	0.392	3.36	
50)	1,1,1-trichloroethane 0.813 0.776 0.769 0.756 0.764 0.774 0.762 0.846 0.778	0.782	3.71	
51)	Cyclohexane 0.801 0.769 0.746 0.712 0.758 0.743 0.737	0.792	0.757	3.88
52)	I 1,4-difluorobenzene ----- ISTD -----			
53)	methylcyclohexane			

6.9.4
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Initial Calibration Summary

Job Number: JC7897

Sample: VV6633-ICC6633

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V156935.D

	0.655 0.647 0.644 0.607 0.647 0.641 0.636	0.626	0.638	2.36
54)	epichlorohydrin 0.024 0.025 0.025 0.026 0.028 0.026	0.032	0.027	10.01
55)	n-butyl alcohol 0.010 0.010 0.009 0.010 0.011 0.008	0.009	0.010	10.73
56)	carbon tetrachloride 0.591 0.566 0.547 0.540 0.557 0.561 0.563 0.626 0.506	0.562	5.92	
57)	1,1-dichloropropene 0.454 0.447 0.434 0.428 0.434 0.440 0.439 0.496 0.432	0.445	4.68	
58)	hexane 0.397 0.339 0.328 0.369 0.326 0.359	0.438	0.365	11.17
59)	2,2,4-Trimethylpentane 1.311 1.333 1.369 1.257 1.303 1.364 1.220	1.317	1.309	3.86
60)	benzene 1.479 1.426 1.380 1.362 1.382 1.394 1.386 1.602 1.325	1.415	5.79	
61)	tert-amyl methyl ether 1.286 1.205 1.198 1.176 1.159 1.268 1.127	1.248	1.208	4.57
62)	heptane 0.304 0.232 0.219 0.209 0.236 0.215 0.213	0.242	0.234	13.12
63)	isopropyl acetate 0.080 0.106 0.108 0.121 0.116 0.094	0.104	14.59	
64)	1,2-dichloroethane 0.411 0.427 0.407 0.411 0.415 0.422 0.414 0.378 0.380	0.407	4.20	
65)	ethyl acrylate	0.000	-1.00	
66)	trichloroethylene 0.353 0.344 0.330 0.327 0.327 0.336 0.331 0.392 0.315	0.340	6.60	
67)	2-chloroethyl vinyl ether 0.157 0.156 0.160 0.157 0.158 0.175 0.146	0.150	0.157	5.46
68)	methyl methacrylate 0.058 0.058 0.067 0.066 0.066 0.075 0.063	0.067	0.065	8.43
69)	1,2-dichloropropane 0.333 0.334 0.333 0.328 0.332 0.339 0.338 0.320 0.312	0.330	2.68	
70)	dibromomethane 0.207 0.187 0.191 0.187 0.192 0.196 0.199 0.193 0.188	0.193	3.38	
71)	bromodichloromethane 0.482 0.459 0.458 0.449 0.440 0.459 0.448 0.423 0.420	0.449	4.29	
72)	2-nitropropane 0.111 0.103 0.100 0.104 0.115 0.097	0.122	0.107	8.38
73)	cis-1,3-dichloropropene 0.513 0.513 0.505 0.494 0.503 0.522 0.494 0.508 0.486	0.504	2.27	
74)	toluene-d8 (s) 1.200 1.210 1.231 1.199 1.235 1.228 1.205 1.200 1.189	1.211	1.37	
75)	4-methyl-2-pentanone 0.107 0.112 0.109 0.117 0.126 0.104	0.112	0.113	6.42
76)	toluene 1.018 0.881 0.844 0.818 0.834 0.850 0.827	0.851	0.865	7.47
77)	isoamyl alcohol 0.018 0.016 0.015 0.017 0.019 0.014	0.021	0.017	14.50
78)	trans-1,3-dichloropropene 0.445 0.433 0.441 0.435 0.435 0.458 0.411 0.454 0.425	0.438	3.29	
79)	ethyl methacrylate 0.445 0.359 0.351 0.346 0.357 0.374 0.337	0.353	0.365	9.33
80)	1,1,2-trichloroethane 0.235 0.210 0.210 0.209 0.217 0.218 0.208 0.249 0.210	0.219	6.47	
81)	2-hexanone 0.100 0.097 0.085 0.102 0.102 0.080	0.084	0.093	10.49
82)	I chlorobenzene-d5 -----ISTD-----			
83)	tetrachloroethene			

6.9.4
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Initial Calibration Summary

Job Number: JC7897

Sample: VV6633-ICC6633

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V156935.D

84)	1,3-dichloropropane	0.445 0.423 0.437 0.430 0.438 0.426 0.426 0.435 0.408	0.430	2.47
		0.506 0.460 0.461 0.459 0.457 0.472 0.442 0.464 0.445	0.463	4.02
85)	butyl acetate	0.194 0.190 0.186 0.191 0.201 0.182	0.202	0.192 3.79
86)	3,3-Dimethyl-1-Butanol	0.036 0.034 0.033 0.035 0.039 0.030	0.038	0.035 8.65
87)	dibromochloromethane	0.380 0.342 0.379 0.368 0.367 0.386 0.366 0.391 0.337	0.368	5.03
88)	1,2-dibromoethane	0.301 0.281 0.287 0.283 0.290 0.297 0.288 0.294 0.259	0.287	4.21
89)	chlorobenzene	1.043 1.002 1.003 1.006 1.016 1.007 1.038 1.102 0.973	1.021	3.60
90)	1,1,1,2-tetrachloroethane	0.485 0.462 0.475 0.468 0.460 0.485 0.476 0.489 0.473	0.475	2.13
91)	ethylbenzene	1.981 1.821 1.810 1.809 1.842 1.830 1.850 2.277 1.776	1.888	8.30
92)	m,p-xylene	0.784 0.732 0.737 0.721 0.733 0.721 0.744 0.880 0.726	0.753	6.79
93)	o-xylene	0.758 0.807 0.809 0.793 0.804 0.790 0.797 0.843 0.748	0.794	3.55
94)	styrene	1.326 1.202 1.186 1.193 1.194 1.169 1.192 1.419 1.138	1.224	7.29
95)	bromoform	0.288 0.253 0.261 0.255 0.257 0.272 0.256 0.272 0.257	0.263	4.38
96)	cyclohexanone	0.024 0.017 0.017 0.019 0.019 0.018	0.019	0.019 11.65
97)	4-bromofluorobenzene (s)	0.501 0.503 0.492 0.492 0.495 0.482 0.498 0.492 0.502	0.495	1.32
98)	I 1,4-dichlorobenzene-d -----ISTD-----			
99)	isopropylbenzene	3.837 3.557 3.914 3.847 3.741 4.049 3.711 3.923 3.523	3.789	4.57
100)	1,1,2,2-tetrachloroethane	0.911 0.790 0.782 0.775 0.781 0.843 0.730 0.966 0.780	0.817	9.25
101)	trans-1,4-dichloro-2-butene	0.270 0.234 0.200 0.201 0.202 0.213 0.189 0.233 0.241	0.220	11.81
102)	1,2,3-trichloropropane	0.216 0.191 0.194 0.196 0.201 0.211 0.184 0.189 0.201	0.198	5.17
103)	bromobenzene	0.852 0.855 0.880 0.881 0.859 0.897 0.859 0.903 0.813	0.867	3.14
104)	n-propylbenzene	4.305 3.989 4.100 4.069 4.008 4.195 4.043 4.535 3.862	4.123	4.83
105)	2-chlorotoluene	0.944 0.839 0.902 0.893 0.900 0.919 0.887 1.127 0.848	0.918	9.25
106)	4-chlorotoluene	2.555 2.406 2.365 2.380 2.363 2.440 2.306 3.044 2.336	2.466	9.26
107)	1,3,5-trimethylbenzene	3.446 3.077 3.442 3.313 3.263 3.538 3.183 3.659 3.213	3.348	5.57
108)	tert-butylbenzene	2.756 2.539 2.997 2.932 2.784 3.181 2.723 2.742 2.520	2.797	7.58
109)	pentachloroethane	0.633 0.581 0.663 0.655 0.601 0.720 0.595 0.584 0.514	0.616	9.62
110)	1,2,4-trimethylbenzene	3.176 3.162 3.325 3.306 3.243 3.487 3.182 3.656 3.006	3.283	5.88
111)	sec-butylbenzene	4.602 4.207 4.708 4.635 4.501 4.974 4.409 4.527 4.195	4.529	5.39
112)	p-isopropyltoluene	3.552 3.512 3.930 3.851 3.757 4.060 3.664 3.835 3.410	3.730	5.70
113)	1,3-dichlorobenzene			

Initial Calibration Summary

Job Number: JC7897

Sample: VV6633-ICC6633

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Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V156935.D

114)	1,4-dichlorobenzene	1.950 1.816 1.769 1.812 1.789 1.831 1.840 1.965 1.757	1.837	4.02
		1.847 1.790 1.744 1.761 1.749 1.795 1.777 1.962 1.767	1.799	3.80
115)	1,2-dichlorobenzene	1.966 1.852 1.850 1.861 1.843 1.942 1.832 2.109 1.808	1.896	5.02
116)	Benzyl Chloride	2.021 1.623 1.532 1.539 1.566 1.642 1.522	1.761	1.651 10.25
117)	Indane		0.000	-1.00
118)	n-butylbenzene	1.961 1.800 1.924 1.916 1.929 1.966 1.883 2.093 1.852	1.925	4.29
119)	hexachloroethane	0.598 0.557 0.727 0.702 0.643 0.773 0.630 0.564 0.567	0.640	12.25
120)	1,2-dibromo-3-chloropropane	0.228 0.208 0.209 0.216 0.236 0.202	0.251	0.221 8.01
121)	1,3,5-trichlorobenzene	2.132 1.987 1.900 1.948 1.938 1.992 1.941 2.179 1.886	1.989	5.09
122)	1,2,4-trichlorobenzene	2.156 1.821 1.815 1.863 1.840 1.907 1.862 2.018 1.852	1.904	5.92
123)	hexachlorobutadiene	1.093 0.970 1.068 1.063 1.016 1.150 0.996 1.012 0.920	1.032	6.68
124)	naphthalene	4.449 3.845 3.795 3.759 3.829 4.178 3.707 4.993 3.848	4.045	10.58
125)	1,2,3-trichlorobenzene	2.157 1.902 1.833 1.835 1.832 1.946 1.793 2.204 1.799	1.922	8.04

(#) = Out of Range ### Number of calibration levels exceeded format ###

MVS6633.M Thu Oct 29 11:49:10 2015 MSV

Initial Calibration Verification

Job Number: JC7897

Sample: VV6633-ICV6633

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V156940.D

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\V156940.D Vial: 14
 Acq On : 28 Oct 2015 11:23 pm Operator: payalr
 Sample : icv6633-50 Inst : MSV
 Misc : MS92958,VV6633,5,,,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MVS6633.M (RTE Integrator)
 Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Thu Oct 29 11:45:05 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	110	0.00	
2	tertiary butyl alcohol	1.284	1.247	2.9	112	0.02	
3	1,4-dioxane	0.092	0.092	0.0	102	0.00	
4	I pentafluorobenzene	1.000	1.000	0.0	103	0.00	
5	propene			-----NA-----			
6	chlorodifluoromethane	0.724	0.445	38.5#	66	0.00	
7	dichlorodifluoromethane	0.811	0.688	15.2	91	0.02	
8	chloromethane	0.751	0.711	5.3	100	0.00	
9	vinyl chloride	0.770	0.737	4.3	100	0.00	
10	1,3-butadiene			-----NA-----			
11	bromomethane	0.439	0.448	-2.1	102	0.00	
12	chloroethane	0.352	0.342	2.8	101	0.00	
13	trichlorofluoromethane	0.772	0.743	3.8	100	0.00	
14	vinyl bromide			-----NA-----			
15	ethyl ether	0.211	0.213	-0.9	105	0.00	
16	2-chloropropane	0.831	0.781	6.0	100	0.00	
17	acrolein	0.072	0.072	0.0	105	0.00	
18	freon 113	0.355	0.309	13.0	93	0.00	
19	1,1-dichloroethene	0.676	0.657	2.8	103	0.00	
20	acetone	0.033	0.033	0.0	109	0.00	
21	iso-butyl alcohol	0.014	0.014	0.0	103	0.00	
22	allyl chloride	0.235	0.272	-15.7	112	0.00	
23	acetonitrile	0.111	0.116	-4.5	110	0.00	
24	iodomethane	0.882	0.875	0.8	101	0.00	
25	carbon disulfide	1.702	1.678	1.4	104	0.00	
26	methylene chloride	0.527	0.483	8.3	104	0.00	
27	1-chloropropane	0.794	0.754	5.0	103	0.00	
28	methyl acetate	0.236	0.243	-3.0	106	0.00	
29	methyl tert butyl ether	1.479	1.404	5.1	100	0.00	
30	trans-1,2-dichloroethene	0.642	0.620	3.4	102	0.00	
31	di-isopropyl ether	1.524	1.464	3.9	100	0.00	
32	2-butanone	0.040	0.041	-2.5	109	0.00	
33	1,1-dichloroethane	0.771	0.788	-2.2	107	0.00	
34	chloroprene	0.594	0.689	-16.0	124	0.00	
35	acrylonitrile	0.123	0.129	-4.9	113	0.00	
36	vinyl acetate	0.061	0.058	4.9	98	0.00	
37	ethyl tert-butyl ether	1.492	1.464	1.9	99	0.00	
38	ethyl acetate	0.045	0.041	8.9	101	0.00	
39	2,2-dichloropropane	0.804	0.752	6.5	102	0.00	
40	cis-1,2-dichloroethene	0.501	0.475	5.2	103	0.00	
41	propionitrile	0.046	0.049	-6.5	111	0.00	

Initial Calibration Verification

Job Number: JC7897

Sample: VV6633-ICV6633

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V156940.D

42	methyl acrylate	0.044	0.047	-6.8	110	0.00	9.47
43	methacrylonitrile	0.128	0.131	-2.3	105	0.00	9.69
44	bromochloromethane	0.222	0.224	-0.9	103	0.00	9.75
45	tetrahydrofuran	0.128	0.126	1.6	111	0.00	9.79
46	chloroform	0.758	0.763	-0.7	106	0.00	9.80
47	tert-Butyl Formate	0.339	0.373	-10.0	109	0.00	9.81
48 S	dibromofluoromethane (s)	0.397	0.399	-0.5	104	0.00	10.00
49 S	1,2-dichloroethane-d4 (s)	0.392	0.391	0.3	105	0.00	10.43
50	1,1,1-trichloroethane	0.782	0.779	0.4	106	0.00	10.05
51	Cyclohexane	0.757	0.679	10.3	98	0.01	10.11
52 I	1,4-difluorobenzene	1.000	1.000	0.0	102	0.00	10.86
53	methylcyclohexane	0.638	0.553	13.3	93	0.00	11.43
54	epichlorohydrin	0.027	0.024	11.1	101	0.00	12.20
55	n-butyl alcohol	0.010	0.010	0.0	111	0.00	10.98
56	carbon tetrachloride	0.562	0.551	2.0	104	0.00	10.25
57	1,1-dichloropropene	0.445	0.457	-2.7	109	0.00	10.22
58	hexane	0.365	0.281	23.0	87	0.00	8.36
59	2,2,4-Trimethylpentane	1.309	1.067	18.5	86	0.00	10.45
60	benzene	1.415	1.391	1.7	104	0.00	10.50
61	tert-amyl methyl ether	1.208	1.177	2.6	102	0.00	10.49
62	heptane	0.234	0.183	21.8	89	0.00	10.61
63	isopropyl acetate	0.104	0.112	-7.7	106	0.00	10.38
64	1,2-dichloroethane	0.407	0.424	-4.2	105	0.00	10.53
65	ethyl acrylate			-----NA-----			
66	trichloroethene	0.340	0.330	2.9	103	0.00	11.22
67	2-chloroethyl vinyl ether	0.157	0.154	1.9	100	0.00	12.04
68	methyl methacrylate	0.065	0.072	-10.8	111	0.00	11.48
69	1,2-dichloropropane	0.330	0.344	-4.2	107	0.00	11.51
70	dibromomethane	0.193	0.193	0.0	105	0.00	11.69
71	bromodichloromethane	0.449	0.461	-2.7	104	0.00	11.81
72	2-nitropropane	0.107	0.108	-0.9	110	0.00	12.06
73	cis-1,3-dichloropropene	0.504	0.500	0.8	103	0.00	12.29
74 S	toluene-d8 (s)	1.211	1.196	1.2	102	0.00	12.59
75	4-methyl-2-pentanone	0.113	0.118	-4.4	111	0.00	12.38
76	toluene	0.865	0.825	4.6	103	0.00	12.67
77	isoamyl alcohol	0.017	0.016	5.9	110	0.00	12.40
78	trans-1,3-dichloropropene	0.438	0.415	5.3	97	0.00	12.90
79	ethyl methacrylate	0.365	0.355	2.7	104	0.00	12.86
80	1,1,2-trichloroethane	0.219	0.216	1.4	105	0.00	13.14
81	2-hexanone	0.093	0.091	2.2	110	0.00	13.31
82 I	chlorobenzene-d5	1.000	1.000	0.0	100	0.00	14.27
83	tetrachloroethene	0.430	0.442	-2.8	102	0.00	13.31
84	1,3-dichloropropane	0.463	0.468	-1.1	102	0.00	13.34
85	butyl acetate	0.192	0.203	-5.7	109	0.00	13.37
86	3,3-Dimethyl-1-Butanol	0.035	0.036	-2.9	108	0.00	13.49
87	dibromochloromethane	0.368	0.386	-4.9	105	0.00	13.64
88	1,2-dibromoethane	0.287	0.295	-2.8	104	0.00	13.81
89	chlorobenzene	1.021	1.025	-0.4	102	0.00	14.31
90	1,1,1,2-tetrachloroethane	0.475	0.472	0.6	101	0.00	14.37
91	ethylbenzene	1.888	1.835	2.8	101	0.00	14.35
92	m,p-xylene	0.753	0.749	0.5	104	0.00	14.47
93	o-xylene	0.794	0.832	-4.8	105	0.00	14.94
94	styrene	1.224	1.201	1.9	100	0.00	14.96
95	bromoform	0.263	0.272	-3.4	106	0.00	15.29
96	cyclohexanone	0.019	0.018	5.3	102	0.00	15.56
97 S	4-bromofluorobenzene (s)	0.495	0.492	0.6	100	0.00	15.57
98 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	16.88

Initial Calibration Verification

Job Number: JC7897

Sample: VV6633-ICV6633

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V156940.D

99	isopropylbenzene	3.789	3.887	-2.6	101	0.00	15.32
100	1,1,2,2-tetrachloroethane	0.817	0.795	2.7	103	0.00	15.70
101	trans-1,4-dichloro-2-bute	0.220	0.205	6.8	102	0.00	15.74
102	1,2,3-trichloropropane	0.198	0.203	-2.5	104	0.00	15.78
103	bromobenzene	0.867	0.885	-2.1	101	0.00	15.80
104	n-propylbenzene	4.123	4.331	-5.0	107	0.00	15.78
105	2-chlorotoluene	0.918	0.912	0.7	102	0.00	15.96
106	4-chlorotoluene	2.466	2.401	2.6	101	0.00	16.07
107	1,3,5-trimethylbenzene	3.348	3.404	-1.7	103	0.00	15.94
108	tert-butylbenzene	2.797	2.981	-6.6	102	0.00	16.33
109	pentachloroethane	0.616	0.672	-9.1	103	0.00	16.45
110	1,2,4-trimethylbenzene	3.283	3.482	-6.1	106	0.00	16.39
111	sec-butylbenzene	4.529	4.667	-3.0	101	0.00	16.57
112	p-isopropyltoluene	3.730	3.940	-5.6	103	0.00	16.70
113	1,3-dichlorobenzene	1.837	1.805	1.7	100	0.00	16.82
114	1,4-dichlorobenzene	1.799	1.793	0.3	102	0.00	16.90
115	1,2-dichlorobenzene	1.896	1.898	-0.1	102	0.00	17.35
116	Benzyl Chloride	1.651	1.416	14.2	92	0.00	17.04
117	Indane			-----NA-----			
118	n-butylbenzene	1.925	1.954	-1.5	102	0.00	17.17
119	hexachloroethane	0.640	0.719	-12.3	103	0.00	17.63
120	1,2-dibromo-3-chloropropane	0.221	0.220	0.5	106	0.00	18.22
121	1,3,5-trichlorobenzene	1.989	1.933	2.8	99	0.00	18.40
122	1,2,4-trichlorobenzene	1.904	1.810	4.9	97	0.00	19.14
123	hexachlorobutadiene	1.032	1.020	1.2	96	0.00	19.25
124	naphthalene	4.045	3.821	5.5	102	0.00	19.49
125	1,2,3-trichlorobenzene	1.922	1.795	6.6	98	0.00	19.79

(#= Out of Range
V156935.D MVS6633.MSPCC's out = 0 CCC's out = 0
Thu Oct 29 11:48:50 2015 MSV

Continuing Calibration Summary

Page 1 of 3

Job Number: JC7897

Sample: VV6649-CC6633

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: V157410.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\V157410.D Vial: 2
 Acq On : 10 Nov 2015 10:34 am Operator: payalr
 Sample : cc6633-20 Inst : MSV
 Misc : MS94183,VV6649,5.0,,,1 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MVS6633.M (RTE Integrator)
 Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Thu Oct 29 11:45:05 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	84	0.00	7.68
2	tertiary butyl alcohol	1.284	1.339	-4.3	92	0.02	7.80
3	1,4-dioxane	0.092	0.109	-18.5	95	0.00	11.62
4	I pentafluorobenzene	1.000	1.000	0.0	87	0.00	9.91
5	propene			-----NA-----			
6	chlorodifluoromethane	0.724	0.668	7.7	85	0.00	4.33
7	dichlorodifluoromethane	0.811	0.790	2.6	83	0.02	4.33
8	chloromethane	0.751	0.810	-7.9	99	-0.01	4.63
9	vinyl chloride	0.770	0.838	-8.8	98	0.00	4.91
10	1,3-butadiene			-----NA-----			
11	bromomethane	0.439	0.503	-14.6	105	-0.03	5.55
12	chloroethane	0.352	0.365	-3.7	95	0.00	5.72
13	trichlorofluoromethane	0.772	0.773	-0.1	87	0.00	6.18
14	vinyl bromide			-----NA-----			
15	ethyl ether	0.211	0.238	-12.8	101	0.00	6.56
16	2-chloropropane	0.831	0.828	0.4	90	0.00	6.78
17	acrolein	0.072	0.081	-12.5	101	0.00	6.86
18	freon 113	0.355	0.361	-1.7	87	0.01	6.97
19	1,1-dichloroethene	0.676	0.674	0.3	90	0.00	7.01
20	acetone	0.033	0.036	-9.1	96	0.00	7.08
21	iso-butyl alcohol	0.014	0.015	-7.1	94	0.00	10.49
22	allyl chloride	0.235	0.265	-12.8	96	0.00	7.54
23	acetonitrile	0.111	0.117	-5.4	95	0.00	7.54
24	iodomethane	0.882	0.963	-9.2	99	0.00	7.31
25	carbon disulfide	1.702	1.798	-5.6	94	0.00	7.44
26	methylene chloride	0.527	0.546	-3.6	100	0.00	7.74
27	1-chloropropane	0.794	0.796	-0.3	89	0.00	7.77
28	methyl acetate	0.236	0.244	-3.4	90	0.00	7.52
29	methyl tert butyl ether	1.479	1.531	-3.5	95	0.00	8.03
30	trans-1,2-dichloroethene	0.642	0.677	-5.5	92	0.00	8.10
31	di-isopropyl ether	1.524	1.573	-3.2	93	0.00	8.60
32	2-butanone	0.040	0.042	-5.0	94	0.00	9.40
33	1,1-dichloroethane	0.771	0.837	-8.6	98	0.00	8.68
34	chloroprene	0.594	0.566	4.7	88	0.00	8.78
35	acrylonitrile	0.123	0.141	-14.6	103	0.00	8.09
36	vinyl acetate	0.061	0.064	-4.9	94	0.00	8.64
37	ethyl tert-butyl ether	1.492	1.554	-4.2	93	0.00	9.07
38	ethyl acetate	0.045	0.043	4.4	83	0.00	9.37
39	2,2-dichloropropane	0.804	0.680	15.4	77	0.00	9.41
40	cis-1,2-dichloroethene	0.501	0.538	-7.4	100	0.00	9.43
41	propionitrile	0.046	0.054	-17.4	102	0.00	9.52

6.6.9
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Continuing Calibration Summary

Page 2 of 3

Job Number: JC7897

Sample: VV6649-CC6633

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V157410.D

42	methyl acrylate	0.044	0.050	-13.6	93	0.00	9.47
43	methacrylonitrile	0.128	0.142	-10.9	93	0.01	9.70
44	bromochloromethane	0.222	0.252	-13.5	99	0.00	9.75
45	tetrahydrofuran	0.128	0.135	-5.5	102	0.00	9.79
46	chloroform	0.758	0.800	-5.5	95	0.00	9.79
47	tert-Butyl Formate	0.339	0.350	-3.2	93	-0.01	9.80
48 S	dibromofluoromethane (s)	0.397	0.400	-0.8	90	0.00	10.00
49 S	1,2-dichloroethane-d4 (s)	0.392	0.367	6.4	82	0.00	10.43
50	1,1,1-trichloroethane	0.782	0.796	-1.8	91	0.00	10.05
51	Cyclohexane	0.757	0.765	-1.1	88	0.00	10.10
52 I	1,4-difluorobenzene	1.000	1.000	0.0	87	0.00	10.86
53	methylcyclohexane	0.638	0.651	-2.0	88	0.00	11.42
54	epichlorohydrin	0.027	0.027	0.0	89	0.00	12.20
55	n-butyl alcohol	0.010	0.011	-10.0	99	0.00	10.99
56	carbon tetrachloride	0.562	0.587	-4.4	92	0.00	10.25
57	1,1-dichloropropene	0.445	0.459	-3.1	93	0.00	10.21
58	hexane	0.365	0.337	7.7	80	0.00	8.36
59	2,2,4-Trimethylpentane	1.309	1.200	8.3	80	0.00	10.44
60	benzene	1.415	1.551	-9.6	98	0.00	10.49
61	tert-amyl methyl ether	1.208	1.248	-3.3	94	0.00	10.49
62	heptane	0.234	0.204	12.8	76	-0.01	10.60
63	isopropyl acetate	0.104	0.138	-32.7#	99	0.00	10.38
64	1,2-dichloroethane	0.407	0.430	-5.7	91	0.00	10.53
65	ethyl acrylate			-----NA-----			
66	trichloroethene	0.340	0.365	-7.4	97	0.00	11.22
67	2-chloroethyl vinyl ether	0.157	0.169	-7.6	94	0.00	12.04
68	methyl methacrylate	0.065	0.076	-16.9	101	0.00	11.48
69	1,2-dichloropropane	0.330	0.379	-14.8	100	0.00	11.51
70	dibromomethane	0.193	0.216	-11.9	98	0.00	11.68
71	bromodichloromethane	0.449	0.486	-8.2	97	0.00	11.81
72	2-nitropropane	0.107	0.095	11.2	79	0.00	12.05
73	cis-1,3-dichloropropene	0.504	0.541	-7.3	94	0.00	12.29
74 S	toluene-d8 (s)	1.211	1.237	-2.1	88	0.00	12.59
75	4-methyl-2-pentanone	0.113	0.128	-13.3	96	0.00	12.37
76	toluene	0.865	0.929	-7.4	97	0.00	12.67
77	isoamyl alcohol	0.017	0.018	-5.9	92	0.00	12.40
78	trans-1,3-dichloropropene	0.438	0.468	-6.8	94	0.00	12.90
79	ethyl methacrylate	0.365	0.385	-5.5	94	0.00	12.86
80	1,1,2-trichloroethane	0.219	0.240	-9.6	97	0.00	13.14
81	2-hexanone	0.093	0.116	-24.7#	99	0.00	13.31
82 I	chlorobenzene-d5	1.000	1.000	0.0	92	0.00	14.27
83	tetrachloroethene	0.430	0.431	-0.2	90	0.00	13.31
84	1,3-dichloropropane	0.463	0.499	-7.8	100	0.00	13.34
85	butyl acetate	0.192	0.210	-9.4	101	0.00	13.37
86	3,3-Dimethyl-1-Butanol	0.035	0.034	2.9	90	0.00	13.49
87	dibromochloromethane	0.368	0.398	-8.2	99	0.00	13.64
88	1,2-dibromoethane	0.287	0.309	-7.7	98	0.00	13.81
89	chlorobenzene	1.021	1.084	-6.2	98	0.00	14.30
90	1,1,1,2-tetrachloroethane	0.475	0.502	-5.7	100	0.00	14.37
91	ethylbenzene	1.888	1.924	-1.9	96	0.00	14.35
92	m,p-xylene	0.753	0.793	-5.3	99	0.00	14.46
93	o-xylene	0.794	0.847	-6.7	97	0.00	14.94
94	styrene	1.224	1.258	-2.8	97	0.00	14.95
95	bromoform	0.263	0.285	-8.4	102	0.00	15.29
96	cyclohexanone	0.019	0.016	15.8	77	0.00	15.55
97 S	4-bromofluorobenzene (s)	0.495	0.502	-1.4	93	0.00	15.57
98 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	95	0.00	16.87

6.9.6
6

Continuing Calibration Summary

Job Number: JC7897

Sample: VV6649-CC6633

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: V157410.D

99	isopropylbenzene	3.789	3.796	-0.2	96	0.00	15.31
100	1,1,2,2-tetrachloroethane	0.817	0.831	-1.7	101	0.00	15.69
101	trans-1,4-dichloro-2-bute	0.220	0.192	12.7	90	0.00	15.74
102	1,2,3-trichloropropane	0.198	0.209	-5.6	99	0.00	15.78
103	bromobenzene	0.867	0.927	-6.9	102	0.00	15.80
104	n-propylbenzene	4.123	4.153	-0.7	98	0.00	15.77
105	2-chlorotoluene	0.918	0.928	-1.1	98	0.00	15.96
106	4-chlorotoluene	2.466	2.485	-0.8	100	0.00	16.07
107	1,3,5-trimethylbenzene	3.348	3.325	0.7	97	0.00	15.94
108	tert-butylbenzene	2.797	2.768	1.0	94	0.00	16.33
109	pentachloroethane	0.616	0.685	-11.2	108	0.00	16.45
110	1,2,4-trimethylbenzene	3.283	3.343	-1.8	98	0.00	16.39
111	sec-butylbenzene	4.529	4.529	0.0	95	0.00	16.57
112	p-isopropyltoluene	3.730	3.869	-3.7	98	0.00	16.70
113	1,3-dichlorobenzene	1.837	1.918	-4.4	102	0.00	16.81
114	1,4-dichlorobenzene	1.799	1.902	-5.7	103	0.00	16.90
115	1,2-dichlorobenzene	1.896	1.997	-5.3	103	0.00	17.35
116	Benzyl Chloride	1.651	1.252	24.2#	76	0.00	17.04
117	Indane			-----NA-----			
118	n-butylbenzene	1.925	1.958	-1.7	96	0.00	17.17
119	hexachloroethane	0.640	0.688	-7.5	101	0.00	17.63
120	1,2-dibromo-3-chloropropane	0.221	0.223	-0.9	98	0.00	18.22
121	1,3,5-trichlorobenzene	1.989	2.021	-1.6	99	0.00	18.39
122	1,2,4-trichlorobenzene	1.904	1.969	-3.4	101	0.00	19.14
123	hexachlorobutadiene	1.032	1.058	-2.5	99	0.00	19.25
124	naphthalene	4.045	3.984	1.5	99	0.00	19.49
125	1,2,3-trichlorobenzene	1.922	1.927	-0.3	100	0.00	19.79

(#= Out of Range
V156934.D MVS6633.MSPCC's out = 0 CCC's out = 0
Tue Nov 10 15:58:45 2015 MSV

6.6.6

Initial Calibration Summary

Page 1 of 5

Job Number: JC7897

Sample: VX6845-ICC6845

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: X159467.D

Project: Sunoco - Marcus Hook Facility, PA

Response Factor Report ACC-VOA-M

Method : C:\MSDCHEM\1\METHODS\MX6845.M (RTE Integrator)
Title : Method 8260B/8260C, ZB624 60m x 0.25mm x 1.4um
Last Update : Fri Nov 06 10:32:41 2015
Response via : Initial Calibration

Calibration Files

1	=x159461.D	2	=x159462.D	100	=x159468.D	50	=x159467.D
20	=x159466.D	200	=x159469.D	8	=x159464.D	4	=x159463.D
0.5	=x159460.D	0.2	=x159459.D	=	=	=	=

Compound

	1	2	100	50	20	200	8	4	0.5	0.2	Avg	%RSD	
<hr/>													
1) I tert butyl alcohol-d9												ISTD	
2) tertiary butyl alcohol					1.203	1.291	1.349	1.140	1.366	1.710	1.343	14.85	
3) 1,4-dioxane					0.120	0.110	0.114	0.107	0.101	0.107	0.112	7.81	
4) I pentafluorobenzene												ISTD	
5) chlorotrifluoroethene												0.000	-1.00
6) chlorodifluoromethane					1.010	0.982	1.018	1.032	0.940	0.988	1.035	1.001	3.34
7) dichlorodifluoromethane					1.403	1.083	1.147	1.178	1.036	1.182	1.180	1.173	9.89
8) chloromethane					0.937	0.950	0.935	0.978	0.922	0.974	0.949	2.38	
9) vinyl chloride					1.090	0.964	0.980	0.957	1.005	0.959	0.964	0.988	4.82
10) bromomethane					0.427	0.486	0.494	0.363	0.501	0.620	0.482	17.76	
11) chloroethane					0.318	0.362	0.388	0.250	0.423	0.443	0.364	19.53	
12) vinyl bromide					0.351	0.393	0.334	0.353	0.361	0.319	0.361	0.354	6.05
13) trichlorofluoromethane					1.009	0.777	0.824	0.855	0.758	0.886	0.883	0.856	9.74
14) 1,3-butadiene					0.630	0.536	0.492	0.515	0.504	0.474	0.524	0.522	9.18
15) pentane												0.000	-1.00
16) ethyl ether					0.177	0.186	0.191	0.193	0.199	0.187	0.183	0.187	3.50
17) acrolein					0.071	0.064	0.068	0.070	0.066	0.066	0.055	0.066	8.18
18) 1,1-dichloroethene					0.754	0.689	0.620	0.666	0.703	0.584	0.714	0.677	7.96
19) acetone					0.100	0.108	0.115	0.108	0.130	0.121	0.114	9.37	
20) allyl chloride					0.228	0.225	0.214	0.210	0.243	0.206	0.228	0.222	5.41
21) acetonitrile					0.038	0.041	0.043	0.037	0.033		0.038	9.67	
22) iodomethane					0.839	0.863	0.809	0.845	0.862	0.797	0.863	0.843	3.17
23) iso-butyl alcohol													

6.9.7
6

Initial Calibration Summary

Page 2 of 5

Job Number: JC7897

Sample: VX6845-ICC6845

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: X159467.D

	0.020	0.022	0.021	0.021	0.022	0.029		0.022	14.18				
24)	carbon disulfide	2.149	1.908	1.606	1.726	1.767	1.541	1.814	1.817	1.310	1.656	1.729	13.01
25)	methylene chloride	0.615	0.441	0.466	0.493	0.424	0.504	0.531			0.496	12.91	
26)	methyl acetate	0.183	0.223	0.228	0.232	0.222	0.224	0.227			0.220	7.65	
27)	methyl tert butyl ether	1.445	1.529	1.318	1.353	1.376	1.295	1.359	1.380	1.107		1.351	8.52
28)	trans-1,2-dichloroethene	0.742	0.682	0.609	0.648	0.684	0.572	0.698	0.681		0.664	8.03	
29)	di-isopropyl ether	2.426	1.868	1.719	1.788	1.772	1.696	1.750	1.844	1.651		1.835	12.63
30)	2-butanone	0.032	0.033	0.032	0.032	0.020					0.030	18.66	
31)	1,1-dichloroethane	0.886	0.825	0.746	0.788	0.830	0.702	0.839	0.795		0.801	7.17	
32)	chloroprene	0.661	0.551	0.546	0.572	0.584	0.533	0.562	0.604		0.577	7.06	
33)	acrylonitrile	0.087	0.122	0.112	0.120	0.117	0.110	0.115	0.102		0.110	10.17	
34)	vinyl acetate	0.046	0.046	0.047	0.044	0.039					0.044	7.58	
35)	ethyl tert-butyl ether	2.029	1.629	1.518	1.543	1.544	1.544	1.499	1.614		1.615	10.72	
36)	ethyl acetate	0.041	0.044	0.048	0.040	0.037	0.037				0.041	10.28	
37)	2,2-dichloropropane	0.984	0.875	0.772	0.812	0.822	0.733	0.848	0.857		0.838	8.94	
38)	cis-1,2-dichloroethene	0.528	0.540	0.429	0.445	0.461	0.409	0.465	0.467		0.468	9.68	
39)	methyl acrylate	0.315	0.312	0.323	0.323	0.308	0.312	0.282			0.311	4.47	
40)	propionitrile	0.040	0.058	0.045	0.048	0.049	0.046	0.045	0.050		0.047	10.82	
41)	tert-Butyl Formate	0.482	0.366	0.345	0.355	0.352	0.344	0.347	0.372		0.370	12.51	
42)	bromochloromethane	0.188	0.211	0.196	0.199	0.203	0.189	0.204	0.207		0.200	4.18	
43)	tetrahydrofuran	0.143	0.119	0.126	0.137	0.117	0.134	0.139			0.131	7.81	
44)	chloroform	0.771	0.792	0.649	0.681	0.697	0.620	0.700	0.696		0.701	8.16	
45)	dibromofluoromethane (s)	0.353	0.359	0.357	0.359	0.365	0.359	0.363	0.360	0.351	0.360	0.359	1.14
46)	1,2-dichloroethane-d4 (s)	0.312	0.319	0.318	0.321	0.327	0.328	0.324	0.317	0.310	0.317	0.319	1.84
47)	freon 113	0.490	0.406	0.412	0.440	0.452	0.388	0.440	0.461		0.436	7.59	
48)	methacrylonitrile	0.120	0.115	0.116	0.112	0.113	0.109	0.111			0.114	3.14	
49)	1,1,1-trichloroethane	0.840	0.749	0.686	0.721	0.720	0.661	0.728	0.738		0.730	7.23	
50)	cyclohexane	0.850	0.781	0.743	0.791	0.802	0.703	0.817	0.809		0.787	5.81	
51)	tert amyl alcohol										0.000	-1.00	
52)	iso-octane	2.059	1.775	1.973	1.953	1.974	2.031	1.837	1.888		1.936	4.98	

Initial Calibration Summary

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Job Number: JC7897

Sample: VX6845-ICC6845

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: X159467.D

53)	I	1,4-difluorobenzene	-----ISTD-----			
54)		epichlorohydrin		0.024	0.026	0.026
				0.024	0.026	0.026
55)	n-butyl alcohol			0.012	0.010	0.011
				0.012	0.010	0.011
56)	carbon tetrachloride			0.582	0.556	0.493
				0.582	0.556	0.493
57)	1,1-dichloropropene			0.471	0.467	0.408
				0.471	0.467	0.408
58)	hexane			0.564	0.453	0.487
				0.564	0.453	0.487
59)	benzene			1.695	1.520	1.247
				1.695	1.520	1.247
60)	tert-amyl methyl ether			1.354	1.038	1.098
				1.354	1.038	1.098
61)	heptane			0.275	0.258	0.263
				0.275	0.258	0.263
62)	isopropyl acetate			0.961	0.780	0.829
				0.961	0.780	0.829
63)	1,2-dichloroethane			0.367	0.418	0.316
				0.367	0.418	0.316
64)	trichloroethene			0.380	0.356	0.325
				0.380	0.356	0.325
65)	ethyl acrylate					
66)	tert amyl ethyl ether					
67)	2-nitropropane			0.078	0.084	0.086
				0.078	0.084	0.086
68)	2-chloroethyl vinyl ether			0.148	0.115	0.120
				0.148	0.115	0.120
69)	methyl methacrylate			0.126	0.205	0.159
				0.126	0.205	0.159
70)	1,2-dichloropropane			0.410	0.445	0.353
				0.410	0.445	0.353
71)	dibromomethane			0.149	0.223	0.167
				0.149	0.223	0.167
72)	methylcyclohexane			0.803	0.709	0.681
				0.803	0.709	0.681
73)	bromodichloromethane			0.449	0.559	0.410
				0.449	0.559	0.410
74)	cis-1,3-dichloropropene			0.589	0.673	0.517
				0.589	0.673	0.517
75)	toluene-d8 (s)			1.219	1.232	1.226
				1.219	1.232	1.226
76)	4-methyl-2-pentanone			0.155	0.112	0.123
				0.155	0.112	0.123
77)	toluene			0.939	0.983	0.773
				0.939	0.983	0.773
78)	3-methyl-1-butanol			0.022	0.016	0.018
				0.022	0.016	0.018
79)	trans-1,3-dichloropropene			0.477	0.606	0.426
				0.477	0.606	0.426
80)	ethyl methacrylate			0.336	0.466	0.333
				0.336	0.466	0.333
81)	1,1,2-trichloroethane			0.253	0.325	0.210
				0.253	0.325	0.210
82)	2-hexanone			0.065	0.114	0.091
				0.065	0.114	0.091
				0.097	0.104	0.090
				0.093	0.095	
				0.094	0.094	
				14.98		

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Initial Calibration Summary

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Job Number: JC7897

Sample: VX6845-ICC6845

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: X159467.D

83)	I	chlorobenzene-d5	-----ISTD-----											
84)	3,3-Dimethyl-1-butanol		0.059 0.047 0.049 0.044 0.052 0.044 0.055							0.050	11.22			
85)	tetrachloroethene		0.415 0.394 0.332 0.352 0.351 0.328 0.349 0.384 0.325							0.359	8.83			
86)	1,3-dichloropropane		0.537 0.686 0.465 0.490 0.494 0.451 0.496 0.539 0.644							0.534	15.09			
87)	butyl acetate		0.204 0.216 0.211 0.204 0.217 0.271							0.221	11.41			
88)	dibromochloromethane		0.413 0.509 0.351 0.364 0.361 0.344 0.366 0.386							0.387	13.98			
89)	1,2-dibromoethane		0.322 0.392 0.272 0.280 0.283 0.271 0.280 0.312							0.301	13.66			
90)	n-butyl ether		2.303 2.629 2.025 2.111 2.043 1.944 2.080 2.230 2.114 1.975 2.145								9.41			
91)	chlorobenzene		1.230 1.389 0.984 1.033 1.052 0.948 1.065 1.135 1.146 1.017 1.100								11.94			
92)	1,1,1,2-tetrachloroethane		0.481 0.566 0.439 0.467 0.440 0.425 0.445 0.520 0.496							0.476	9.66			
93)	ethylbenzene		2.125 2.275 1.696 1.811 1.833 1.609 1.885 1.923 1.856							1.890	10.78			
94)	m,p-xylene		0.757 0.863 0.649 0.696 0.701 0.621 0.721 0.756 0.726 0.648 0.714								9.75			
95)	o-xylene		0.820 0.929 0.734 0.775 0.743 0.719 0.746 0.794 0.732 0.603 0.759								10.92			
96)	styrene		1.305 1.490 1.079 1.138 1.165 1.036 1.171 1.216 1.294 1.404 1.230								11.64			
97)	bromoform		0.366 0.248 0.252 0.252 0.247 0.259 0.283							0.272	15.84			
98)	I	1,4-dichlorobenzene-d	-----ISTD-----											
99)	isopropylbenzene		3.932 4.287 3.830 4.112 3.781 3.653 3.755 3.847 3.637 3.347 3.818								6.80			
100)	cis-1,4-dichloro-2-butene										0.000	-1.00		
101)	Cyclohexanone		0.146 0.124 0.130 0.161 0.126 0.154							0.140	11.15			
102)	4-bromofluorobenzene (s)		0.895 0.893 0.909 0.930 0.919 0.895 0.921 0.904 0.899 0.907 0.907								1.40			
103)	bromobenzene		1.068 1.207 0.867 0.919 0.930 0.822 0.966 1.001 1.050							0.981	11.89			
104)	1,1,2,2-tetrachloroethane		1.158 0.795 0.849 0.831 0.779 0.836 0.924							0.882	14.79			
105)	trans-1,4-dichloro-2-butene		0.203 0.216 0.221 0.193 0.227 0.240							0.216	7.69			
106)	1,2,3-trichloropropane		0.165 0.181 0.190 0.157 0.174 0.222							0.182	12.63			
107)	n-propylbenzene		4.800 5.131 3.923 4.299 4.228 3.637 4.351 4.472 4.604 4.788 4.423								9.93			
108)	4-ethyltoluene										0.000	-1.00		
109)	2-chlorotoluene		1.036 1.094 0.862 0.933 0.909 0.829 0.913 0.966 1.026 0.803 0.937								10.05			
110)	4-chlorotoluene		3.242 2.304 2.430 2.515 2.222 2.647 2.772							2.590	13.27			
111)	1,3,5-trimethylbenzene		3.398 3.682 3.093 3.363 3.145 2.981 3.156 3.373 3.263 3.406 3.286								6.13			
112)	tert-butylbenzene		2.921 3.235 2.887 2.977 2.764 2.857 2.739 2.815 2.631 2.974 2.880								5.73			
113)	pentachloroethane													

Initial Calibration Summary

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Job Number: JC7897

Sample: VX6845-ICC6845

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: X159467.D

Project: Sunoco - Marcus Hook Facility, PA

114)	1,2,4-trimethylbenzene	0.745 0.811 0.689 0.728 0.639 0.668 0.626 0.697 0.610	0.690	9.28
		3.623 3.884 3.018 3.276 3.154 2.895 3.179 3.406 3.474 3.712	3.362	9.39
115)	1,2,3-trimethylbenzene		0.000	-1.00
116)	sec-butylbenzene	4.741 5.214 4.493 4.807 4.453 4.378 4.531 4.698 4.278 4.728	4.632	5.79
117)	1,3-dichlorobenzene	2.314 2.501 1.673 1.816 1.859 1.616 1.957 2.081	1.977	15.56
118)	p-isopropyltoluene	4.359 4.549 3.680 3.963 3.739 3.562 3.812 4.025 4.230 4.777	4.070	9.82
119)	1,4-dichlorobenzene	2.469 2.505 1.644 1.768 1.809 1.595 1.924 2.095	1.976	17.80
120)	1,2-dichlorobenzene	2.448 2.547 1.729 1.844 1.859 1.676 1.919 2.093	2.014	16.10
121)	benzyl chloride	1.478 1.569 1.566 1.438 1.647 2.082	1.630	14.33
122)	1,4-diethylbenzene		0.000	-1.00
123)	n-butylbenzene	2.162 2.389 1.822 1.989 1.965 1.749 2.036 2.107 2.040 2.261	2.052	9.32
124)	1,2,4,5-tetramethylbenzene		0.000	-1.00
125)	1,2-dibromo-3-chloropropane	0.327 0.204 0.218 0.215 0.209 0.219 0.254	0.235	18.55
126)	1,3,5-trichlorobenzene	2.639 2.578 1.815 1.965 1.962 1.827 2.049 2.163 2.432 2.488	2.192	14.39
127)	hexachlorobutadiene	1.248 1.245 0.974 1.034 1.071 0.958 1.081 1.080 1.152 1.261	1.110	10.05
128)	naphthalene	5.705 3.678 3.920 3.951 3.636 4.088 4.503	4.212	17.07
129)	1,2,4-trichlorobenzene	2.740 2.610 1.777 1.923 1.921 1.788 2.066 2.158 2.653 2.910	2.255	19.05
130)	1,2,3-trichlorobenzene	2.824 2.802 1.899 2.026 2.034 1.892 2.147 2.291	2.239	16.83
131)	hexachloroethane	0.621 0.697 0.729 0.727 0.650 0.760 0.630 0.631	0.680	7.96

(#) = Out of Range ### Number of calibration levels exceeded format ###

MX6845.M

Tue Nov 10 09:41:50 2015

GCMSX

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Initial Calibration Verification

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PASample: VX6845-ICV6845
Lab FileID: X159472.D**Evaluate Continuing Calibration Report**

Data File : C:\MSDCHEM\1\DATA\X159472.D Vial: 14
 Acq On : 5 Nov 2015 6:48 pm Operator: payalr
 Sample : icv6845-50 Inst : ACC-VOA-M
 Misc : MS93609,VX6845,5,,,1 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MX6845.M (RTE Integrator)
 Title : Method 8260B/8260C, ZB624 60m x 0.25mm x 1.4um
 Last Update : Fri Nov 06 10:32:41 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.	
1	I tert butyl alcohol-d9	1.000	1.000	0.0	94	-0.02	7.46	
2	tertiary butyl alcohol	1.343	1.307	2.7	95	-0.03	7.59	
3	1,4-dioxane	0.112	0.107	4.5	88	-0.02	12.31	
4	I pentafluorobenzene	1.000	1.000	0.0	95	0.00	10.17	
5	m chlorotrifluoroethene			-----NA-----				
6	chlorodifluoromethane	1.001	0.743	25.8	69	0.00	3.80	
7	dichlorodifluoromethane	1.173	1.178	-0.4	97	0.00	3.78	
8	chloromethane	0.949	0.976	-2.8	97	0.00	4.11	
9	vinyl chloride	0.988	1.008	-2.0	97	0.00	4.39	
10	bromomethane	0.482	0.492	-2.1	96	0.00	5.06	
11	chloroethane	0.364	0.369	-1.4	96	0.00	5.24	
12	vinyl bromide	0.354	0.362	-2.3	97	0.00	5.61	
13	trichlorofluoromethane	0.856	0.850	0.7	98	0.00	5.73	
14	1,3-butadiene	0.522	0.535	-2.5	98	0.00	4.42	
15	pentane			-----NA-----				
16	ethyl ether	0.187	0.203	-8.6	100	0.00	6.17	
17	acrolein	0.066	0.065	1.5	91	0.00	6.49	
18	1,1-dichloroethene	0.677	0.685	-1.2	97	0.00	6.63	
19	acetone	0.114	0.109	4.4	95	0.00	6.75	
20	allyl chloride	0.222	0.226	-1.8	102	0.00	7.25	
21	acetonitrile	0.038	0.042	-10.5	96	0.00	7.26	
22	iodomethane	0.843	0.864	-2.5	97	0.00	6.96	
23	iso-butyl alcohol	0.022	0.021	4.5	91	0.00	10.58	
24	carbon disulfide	1.729	1.733	-0.2	95	0.00	7.07	
25	methylene chloride	0.496	0.477	3.8	97	0.00	7.48	
26	methyl acetate	0.220	0.248	-12.7	103	0.00	7.25	
27	methyl tert butyl ether	1.351	1.368	-1.3	96	0.00	7.83	
28	trans-1,2-dichloroethene	0.664	0.656	1.2	96	0.00	7.89	
29	di-isopropyl ether	1.835	1.892	-3.1	100	0.00	8.53	
30	2-butanone	0.030	0.032	-6.7	92	0.00	9.49	
31	1,1-dichloroethane	0.801	0.818	-2.1	98	0.00	8.59	
32	chloroprene	0.577	0.605	-4.9	100	0.00	8.70	
33	acrylonitrile	0.110	0.117	-6.4	92	0.00	7.89	
34	vinyl acetate	0.044	0.047	-6.8	96	0.00	8.58	
35	ethyl tert-butyl ether	1.615	1.635	-1.2	100	0.00	9.11	
36	ethyl acetate	0.041	0.044	-7.3	94	0.00	9.50	
37	2,2-dichloropropane	0.838	0.807	3.7	94	0.00	9.49	
38	cis-1,2-dichloroethene	0.468	0.456	2.6	97	0.00	9.50	
39	methyl acrylate	0.311	0.317	-1.9	93	0.00	9.60	
40	propionitrile	0.047	0.045	4.3	88	0.00	9.64	
41	tert-Butyl Formate	0.370	0.378	-2.2	101	0.00	10.00	

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Initial Calibration Verification

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PASample: VX6845-ICV6845
Lab FileID: X159472.D

42	bromochloromethane	0.200	0.200	0.0	95	0.00	9.90
43	tetrahydrofuran	0.131	0.124	5.3	93	0.00	9.93
44	chloroform	0.701	0.690	1.6	96	0.00	9.98
45 S	dibromofluoromethane (s)	0.359	0.363	-1.1	96	0.00	10.23
46 S	1,2-dichloroethane-d4 (s)	0.319	0.321	-0.6	95	0.00	10.77
47	freon 113	0.436	0.451	-3.4	97	0.00	6.60
48	methacrylonitrile	0.114	0.112	1.8	92	0.00	9.86
49	1,1,1-trichloroethane	0.730	0.715	2.1	94	0.00	10.26
50	cyclohexane	0.787	0.790	-0.4	95	0.00	10.33
51 m	tert amyl alcohol			-----NA-----			
52 m	iso-octane	1.936	2.090	-8.0	101	0.00	10.80
53 I	1,4-difluorobenzene	1.000	1.000	0.0	95	0.00	11.34
54	epichlorohydrin	0.026	0.025	3.8	94	0.00	13.06
55	n-butyl alcohol	0.011	0.011	0.0	92	0.00	11.56
56	carbon tetrachloride	0.536	0.532	0.7	94	-0.01	10.50
57	1,1-dichloropropene	0.440	0.441	-0.2	96	0.00	10.49
58	hexane	0.499	0.450	9.8	88	0.00	8.21
59	benzene	1.385	1.340	3.2	94	0.00	10.83
60	tert-amyl methyl ether	1.153	1.147	0.5	100	0.00	10.87
61	heptane	0.275	0.290	-5.5	95	0.00	11.03
62	isopropyl acetate	0.841	0.883	-5.0	102	0.00	10.78
63	1,2-dichloroethane	0.356	0.347	2.5	96	0.00	10.89
64	trichloroethene	0.343	0.336	2.0	94	0.00	11.77
65 m	ethyl acrylate			-----NA-----			
66 m	tert amyl ethyl ether			-----NA-----			
67	2-nitropropane	0.085	0.082	3.5	93	0.00	12.88
68	2-chloroethyl vinyl ether	0.124	0.126	-1.6	100	0.00	12.89
69	methyl methacrylate	0.164	0.162	1.2	93	0.00	12.17
70	1,2-dichloropropane	0.384	0.374	2.6	94	0.00	12.15
71	dibromomethane	0.176	0.170	3.4	94	0.00	12.37
72	methylcyclohexane	0.716	0.738	-3.1	97	0.00	12.03
73	bromodichloromethane	0.444	0.431	2.9	95	0.00	12.55
74	cis-1,3-dichloropropene	0.546	0.538	1.5	95	0.00	13.16
75 S	toluene-d8 (s)	1.230	1.249	-1.5	96	0.00	13.53
76	4-methyl-2-pentanone	0.123	0.112	8.9	87	0.00	13.31
77	toluene	0.841	0.824	2.0	95	0.00	13.62
78	3-methyl-1-butanol	0.018	0.017	5.6	91	0.00	13.37
79	trans-1,3-dichloropropene	0.470	0.451	4.0	96	0.00	13.94
80	ethyl methacrylate	0.358	0.346	3.4	94	0.00	13.93
81	1,1,2-trichloroethane	0.239	0.220	7.9	96	0.00	14.22
82	2-hexanone	0.094	0.095	-1.1	94	0.00	14.47
83 I	chlorobenzene-d5	1.000	1.000	0.0	98	0.00	15.56
84	3,3-Dimethyl-1-butanol	0.050	0.047	6.0	95	0.00	14.72
85	tetrachloroethene	0.359	0.335	6.7	93	0.00	14.40
86	1,3-dichloropropane	0.534	0.478	10.5	95	0.00	14.46
87	butyl acetate	0.221	0.219	0.9	99	0.00	14.57
88	dibromochloromethane	0.387	0.356	8.0	96	0.00	14.81
89	1,2-dibromoethane	0.301	0.275	8.6	96	0.00	14.99
90 m	n-butyl ether	2.145	2.036	5.1	94	0.00	15.50
91	chlorobenzene	1.100	1.016	7.6	96	0.00	15.60
92	1,1,1,2-tetrachloroethane	0.476	0.430	9.7	90	0.00	15.69
93	ethylbenzene	1.890	1.758	7.0	95	0.00	15.67
94	m,p-xylene	0.714	0.668	6.4	94	0.00	15.81
95	o-xylene	0.759	0.731	3.7	92	0.00	16.36
96	styrene	1.230	1.114	9.4	96	0.00	16.38
97	bromoform	0.272	0.243	10.7	95	0.00	16.72
98 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	99	0.00	18.31

6.9.8
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Initial Calibration Verification

Job Number: JC7897

Sample: VX6845-ICV6845

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: X159472.D

99	isopropylbenzene	3.818	3.736	2.1	90	0.00	16.79
100	cis-1,4-dichloro-2-butene			-----NA-----			
101	Cyclohexanone	0.140	0.129	7.9	103	0.00	17.02
102 S	4-bromofluorobenzene (s)	0.907	0.933	-2.9	99	0.00	17.04
103	bromobenzene	0.981	0.894	8.9	96	0.00	17.26
104	1,1,2,2-tetrachloroethane	0.882	0.785	11.0	91	0.00	17.20
105	trans-1,4-dichloro-2-bute	0.216	0.208	3.7	95	0.00	17.25
106	1,2,3-trichloropropane	0.182	0.174	4.4	96	0.00	17.27
107	n-propylbenzene	4.423	4.019	9.1	93	0.00	17.27
108 m	4-ethyltoluene			-----NA-----			
109	2-chlorotoluene	0.937	0.875	6.6	93	0.00	17.44
110	4-chlorotoluene	2.590	2.383	8.0	97	0.00	17.56
111	1,3,5-trimethylbenzene	3.286	3.086	6.1	91	0.00	17.45
112	tert-butylbenzene	2.880	2.806	2.6	93	0.00	17.83
113	pentachloroethane	0.690	0.666	3.5	91	0.00	17.93
114	1,2,4-trimethylbenzene	3.362	3.037	9.7	92	0.00	17.88
115 m	1,2,3-trimethylbenzene			-----NA-----			
116	sec-butylbenzene	4.632	4.398	5.1	91	0.00	18.05
117	1,3-dichlorobenzene	1.977	1.723	12.8	94	0.00	18.25
118	p-isopropyltoluene	4.070	3.593	11.7	90	0.00	18.18
119	1,4-dichlorobenzene	1.976	1.684	14.8	94	0.00	18.34
120	1,2-dichlorobenzene	2.014	1.765	12.4	95	0.00	18.73
121	benzyl chloride	1.630	1.436	11.9	91	0.00	18.47
122 m	1,4-diethylbenzene			-----NA-----			
123	n-butylbenzene	2.052	1.793	12.6	89	0.00	18.60
124 m	1,2,4,5-tetramethylbenzen			-----NA-----			
125	1,2-dibromo-3-chloropropa	0.235	0.205	12.8	93	0.00	19.47
126	1,3,5-trichlorobenzene	2.192	1.751	20.1	88	0.00	19.61
127	hexachlorobutadiene	1.110	0.976	12.1	93	0.00	20.27
128	naphthalene	4.212	3.737	11.3	94	0.00	20.45
129	1,2,4-trichlorobenzene	2.255	1.753	22.3	90	0.00	20.19
130 m	1,2,3-trichlorobenzene	2.239	1.914	14.5	94	0.00	20.67
131	hexachloroethane	0.680	0.688	-1.2	94	0.00	18.96

(#= Out of Range
x159467.D MX6845.MSPCC's out = 0 CCC's out = 0
Tue Nov 10 09:48:41 2015 GCMSX6.9.8
6

Continuing Calibration Summary

Page 1 of 3

Job Number: JC7897

Sample: VX6848-CC6845

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: X159513.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\X159513.D

Vial: 2

Acq On : 7 Nov 2015 10:44 am

Operator: payalr

Sample : cc6845-20

Inst : ACC-VOA-M

Misc : MS93977,VX6848,5.0,,,1

Multipllr: 1.00

MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MX6845.M (RTE Integrator)

Title : Method 8260B/8260C, ZB624 60m x 0.25mm x 1.4um

Last Update : Fri Nov 06 10:32:41 2015

Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min

Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1	I tert butyl alcohol-d9	1.000	1.000	0.0	108	0.00	
2	tertiary butyl alcohol	1.343	1.284	4.4	103	-0.03	
3	1,4-dioxane	0.112	0.107	4.5	108	0.00	
4	I pentafluorobenzene	1.000	1.000	0.0	105	0.00	
5	m chlorotrifluoroethene			-----NA-----			
6	chlorodifluoromethane	1.001	1.018	-1.7	104	0.00	
7	dichlorodifluoromethane	1.173	1.217	-3.8	108	-0.01	
8	chloromethane	0.949	0.965	-1.7	108	0.00	
9	vinyl chloride	0.988	0.970	1.8	106	-0.02	
10	bromomethane	0.482	0.483	-0.2	103	0.00	
11	chloroethane	0.364	0.439	-20.6#	119	0.00	
12	vinyl bromide	0.354	0.363	-2.5	106	0.00	
13	trichlorofluoromethane	0.856	0.858	-0.2	105	-0.03	
14	1,3-butadiene	0.522	0.519	0.6	108	0.00	
15	pentane			-----NA-----			
16	ethyl ether	0.187	0.199	-6.4	105	0.00	
17	acrolein	0.066	0.066	0.0	100	0.00	
18	1,1-dichloroethene	0.677	0.721	-6.5	108	0.00	
19	acetone	0.114	0.191	-67.5#	174	0.00	
20	allyl chloride	0.222	0.238	-7.2	103	0.00	
21	acetonitrile	0.038	0.040	-5.3	99	0.02	
22	iodomethane	0.843	0.857	-1.7	104	0.00	
23	iso-butyl alcohol	0.022	0.023	-4.5	110	0.00	
24	carbon disulfide	1.729	1.818	-5.1	108	0.00	
25	methylene chloride	0.496	0.503	-1.4	107	0.00	
26	methyl acetate	0.220	0.234	-6.4	106	0.02	
27	methyl tert butyl ether	1.351	1.418	-5.0	108	0.00	
28	trans-1,2-dichloroethene	0.664	0.735	-10.7	113	0.00	
29	di-isopropyl ether	1.835	1.859	-1.3	110	0.00	
30	2-butanone	0.030	0.042	-40.0#	137	0.01	
31	1,1-dichloroethane	0.801	0.886	-10.6	112	0.00	
32	chloroprene	0.577	0.602	-4.3	108	0.00	
33	acrylonitrile	0.110	0.121	-10.0	108	0.01	
34	vinyl acetate	0.044	0.040	9.1	88	0.01	
35	ethyl tert-butyl ether	1.615	1.545	4.3	105	0.00	
36	ethyl acetate	0.041	0.045	-9.8	97	0.02	
37	2,2-dichloropropane	0.838	0.906	-8.1	116	0.00	
38	cis-1,2-dichloroethene	0.468	0.473	-1.1	108	0.00	
39	methyl acrylate	0.311	0.327	-5.1	106	0.02	
40	propionitrile	0.047	0.051	-8.5	111	0.01	
41	tert-Butyl Formate	0.370	0.352	4.9	105	0.01	

6.9.9
6

Continuing Calibration Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PASample: VX6848-CC6845
Lab FileID: X159513.D

42	bromochloromethane	0.200	0.211	-5.5	109	0.00	9.91	
43	tetrahydrofuran	0.131	0.142	-8.4	109	0.02	9.95	
44	chloroform	0.701	0.747	-6.6	112	0.00	9.99	
45 S	dibromofluoromethane (s)	0.359	0.370	-3.1	106	0.00	10.24	
46 S	1,2-dichloroethane-d4 (s)	0.319	0.346	-8.5	111	0.00	10.78	
47	freon 113	0.436	0.418	4.1	97	-0.01	6.60	
48	methacrylonitrile	0.114	0.122	-7.0	114	0.00	9.86	
49	1,1,1-trichloroethane	0.730	0.750	-2.7	109	0.00	10.27	
50	cyclohexane	0.787	0.819	-4.1	107	0.00	10.33	
51 m	tert amyl alcohol			-----NA-----				
52 m	iso-octane	1.936	1.913	1.2	102	0.00	10.80	
53 I	1,4-difluorobenzene	1.000	1.000	0.0	106	0.00	11.35	
54	epichlorohydrin	0.026	0.025	3.8	104	0.00	13.07	
55	n-butyl alcohol	0.011	0.010	9.1	101	0.00	11.58	
56	carbon tetrachloride	0.536	0.558	-4.1	110	0.00	10.51	
57	1,1-dichloropropene	0.440	0.478	-8.6	111	0.00	10.49	
58	hexane	0.499	0.491	1.6	104	0.00	8.22	
59	benzene	1.385	1.458	-5.3	111	0.01	10.84	
60	tert-amyl methyl ether	1.153	1.101	4.5	103	0.00	10.88	
61	heptane	0.275	0.279	-1.5	105	0.00	11.03	
62	isopropyl acetate	0.841	0.810	3.7	104	0.01	10.79	
63	1,2-dichloroethane	0.356	0.390	-9.6	112	0.00	10.90	
64	trichloroethene	0.343	0.352	-2.6	108	0.00	11.78	
65 m	ethyl acrylate			-----NA-----				
66 m	tert amyl ethyl ether			-----NA-----				
67	2-nitropropane	0.085	0.088	-3.5	107	0.01	12.89	
68	2-chloroethyl vinyl ether	0.124	0.088	29.0#	79	0.00	12.89	
69	methyl methacrylate	0.164	0.173	-5.5	110	0.01	12.18	
70	1,2-dichloropropane	0.384	0.402	-4.7	111	0.00	12.15	
71	dibromomethane	0.176	0.178	-1.1	104	0.00	12.37	
72	methylcyclohexane	0.716	0.684	4.5	101	0.00	12.03	
73	bromodichloromethane	0.444	0.451	-1.6	110	0.00	12.56	
74	cis-1,3-dichloropropene	0.546	0.578	-5.9	110	0.00	13.17	
75 S	toluene-d8 (s)	1.230	1.246	-1.3	106	0.00	13.53	
76	4-methyl-2-pentanone	0.123	0.120	2.4	106	0.01	13.32	
77	toluene	0.841	0.865	-2.9	108	0.00	13.63	
78	3-methyl-1-butanol	0.018	0.016	11.1	99	0.01	13.38	
79	trans-1,3-dichloropropene	0.470	0.484	-3.0	110	0.00	13.95	
80	ethyl methacrylate	0.358	0.361	-0.8	106	0.00	13.94	
81	1,1,2-trichloroethane	0.239	0.237	0.8	110	0.01	14.23	
82	2-hexanone	0.094	0.124	-31.9#	126	0.01	14.48	
83 I	chlorobenzene-d5	1.000	1.000	0.0	104	0.00	15.56	
84	3,3-Dimethyl-1-butanol	0.050	0.045	10.0	106	0.00	14.72	
85	tetrachloroethene	0.359	0.340	5.3	100	0.00	14.40	
86	1,3-dichloropropane	0.534	0.517	3.2	108	0.00	14.47	
87	butyl acetate	0.221	0.209	5.4	102	0.00	14.57	
88	dibromochloromethane	0.387	0.372	3.9	107	0.00	14.81	
89	1,2-dibromoethane	0.301	0.291	3.3	106	0.00	15.00	
90 m	n-butyl ether	2.145	2.240	-4.4	114	0.00	15.51	
91	chlorobenzene	1.100	1.070	2.7	105	0.00	15.60	
92	1,1,1,2-tetrachloroethane	0.476	0.449	5.7	106	0.00	15.69	
93	ethylbenzene	1.890	1.906	-0.8	108	0.00	15.68	
94	m,p-xylene	0.714	0.725	-1.5	107	0.01	15.82	
95	o-xylene	0.759	0.764	-0.7	107	0.00	16.37	
96	styrene	1.230	1.175	4.5	105	0.00	16.39	
97	bromoform	0.272	0.257	5.5	106	0.01	16.73	
98 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	101	0.00	18.32	

Continuing Calibration Summary

Job Number: JC7897

Sample: VX6848-CC6845

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: X159513.D

99	isopropylbenzene	3.818	3.987	-4.4	107	0.00	16.80
100	cis-1,4-dichloro-2-butene			-----NA-----			
101	Cyclohexanone	0.140	0.246	-75.7#	193	0.00	17.03
102 S	4-bromofluorobenzene (s)	0.907	0.949	-4.6	105	0.00	17.05
103	bromobenzene	0.981	0.945	3.7	103	0.01	17.27
104	1,1,2,2-tetrachloroethane	0.882	0.883	-0.1	108	0.01	17.21
105	trans-1,4-dichloro-2-bute	0.216	0.256	-18.5	118	0.00	17.25
106	1,2,3-trichloropropane	0.182	0.202	-11.0	108	0.01	17.28
107	n-propylbenzene	4.423	4.460	-0.8	107	0.01	17.28
108 m	4-ethyltoluene			-----NA-----			
109	2-chlorotoluene	0.937	0.930	0.7	104	0.00	17.45
110	4-chlorotoluene	2.590	2.648	-2.2	107	0.00	17.56
111	1,3,5-trimethylbenzene	3.286	3.310	-0.7	107	0.00	17.46
112	tert-butylbenzene	2.880	2.874	0.2	105	0.00	17.83
113	pentachloroethane	0.690	0.689	0.1	110	0.00	17.93
114	1,2,4-trimethylbenzene	3.362	3.263	2.9	105	0.00	17.88
115 m	1,2,3-trimethylbenzene			-----NA-----			
116	sec-butylbenzene	4.632	4.646	-0.3	106	0.00	18.06
117	1,3-dichlorobenzene	1.977	1.916	3.1	105	0.00	18.26
118	p-isopropyltoluene	4.070	3.842	5.6	104	0.00	18.19
119	1,4-dichlorobenzene	1.976	1.876	5.1	105	0.00	18.34
120	1,2-dichlorobenzene	2.014	1.881	6.6	103	0.00	18.73
121	benzyl chloride	1.630	1.717	-5.3	111	0.00	18.48
122 m	1,4-diethylbenzene			-----NA-----			
123	n-butylbenzene	2.052	2.026	1.3	105	0.00	18.60
124 m	1,2,4,5-tetramethylbenzen			-----NA-----			
125	1,2-dibromo-3-chloropropa	0.235	0.217	7.7	102	0.00	19.47
126	1,3,5-trichlorobenzene	2.192	1.973	10.0	102	0.01	19.62
127	hexachlorobutadiene	1.110	1.030	7.2	98	0.00	20.28
128	naphthalene	4.212	3.933	6.6	101	0.01	20.46
129	1,2,4-trichlorobenzene	2.255	1.983	12.1	105	0.00	20.20
130 m	1,2,3-trichlorobenzene	2.239	2.040	8.9	102	0.00	20.67
131	hexachloroethane	0.680	0.660	2.9	103	0.00	18.96

(#= Out of Range
x159466.D MX6845.MSPCC's out = 0 CCC's out = 0
Thu Nov 12 11:51:21 2015 GCMSX6.9.9
6

Continuing Calibration Summary

Job Number: JC7897

Sample: VX6848-CC6845

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: X159547.D

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\X159547.D Vial: 3
 Acq On : 9 Nov 2015 11:11 am Operator: payalr
 Sample : cc6845-20 Inst : ACC-VOA-M
 Misc : MS93977,VX6848,5.0,,,1 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MX6845.M (RTE Integrator)
 Title : Method 8260B/8260C, ZB624 60m x 0.25mm x 1.4um
 Last Update : Fri Nov 06 10:32:41 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	tert butyl alcohol-d9	1.000	1.000	0.0	114	-0.03	
2	tertiary butyl alcohol	1.343	1.415	-5.4	119	-0.04	
3	1,4-dioxane	0.112	0.111	0.9	118	-0.03	
4 I	pentafluorobenzene	1.000	1.000	0.0	101	-0.02	
5 m	chlorotrifluoroethene			-----NA-----			
6	chlorodifluoromethane	1.001	1.059	-5.8	103	-0.01	
7	dichlorodifluoromethane	1.173	1.122	4.3	96	-0.01	
8	chloromethane	0.949	1.035	-9.1	112	-0.01	
9	vinyl chloride	0.988	1.004	-1.6	106	-0.02	
10	bromomethane	0.482	0.511	-6.0	104	-0.01	
11	chloroethane	0.364	0.406	-11.5	105	-0.01	
12	vinyl bromide	0.354	0.341	3.7	95	-0.02	
13	trichlorofluoromethane	0.856	0.839	2.0	99	-0.01	
14	1,3-butadiene	0.522	0.533	-2.1	107	-0.01	
15	pentane			-----NA-----			
16	ethyl ether	0.187	0.208	-11.2	106	-0.02	
17	acrolein	0.066	0.074	-12.1	107	-0.02	
18	1,1-dichloroethene	0.677	0.725	-7.1	104	-0.02	
19	acetone	0.114	0.208	-82.5#	182	-0.01	
20	allyl chloride	0.222	0.249	-12.2	103	-0.02	
21	acetonitrile	0.038	0.051	-34.2#	121	-0.02	
22	iodomethane	0.843	0.831	1.4	97	-0.02	
23	iso-butyl alcohol	0.022	0.028	-27.3#	130	-0.02	
24	carbon disulfide	1.729	1.798	-4.0	103	-0.02	
25	methylene chloride	0.496	0.531	-7.1	109	-0.01	
26	methyl acetate	0.220	0.278	-26.4#	121	-0.02	
27	methyl tert butyl ether	1.351	1.500	-11.0	110	-0.03	
28	trans-1,2-dichloroethene	0.664	0.711	-7.1	105	-0.02	
29	di-isopropyl ether	1.835	1.943	-5.9	110	-0.02	
30	2-butanone	0.030	0.050	-66.7#	156	0.00	
31	1,1-dichloroethane	0.801	0.880	-9.9	107	-0.02	
32	chloroprene	0.577	0.572	0.9	99	-0.02	
33	acrylonitrile	0.110	0.138	-25.5#	118	-0.01	
34	vinyl acetate	0.044	0.039	11.4	83	-0.02	
35	ethyl tert-butyl ether	1.615	1.615	0.0	105	-0.02	
36	ethyl acetate	0.041	0.023	43.9#	48#	-0.02	
37	2,2-dichloropropane	0.838	0.876	-4.5	107	-0.02	
38	cis-1,2-dichloroethene	0.468	0.471	-0.6	103	-0.02	
39	methyl acrylate	0.311	0.393	-26.4#	122	-0.02	
40	propionitrile	0.047	0.062	-31.9#	129	-0.02	
41	tert-Butyl Formate	0.370	0.388	-4.9	111	-0.02	

Continuing Calibration Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PASample: VX6848-CC6845
Lab FileID: X159547.D

42	bromochloromethane	0.200	0.211	-5.5	105	-0.02	9.89	
43	tetrahydrofuran	0.131	0.151	-15.3	111	-0.01	9.92	
44	chloroform	0.701	0.752	-7.3	109	-0.02	9.96	
45 S	dibromofluoromethane (s)	0.359	0.376	-4.7	104	-0.02	10.22	
46 S	1,2-dichloroethane-d4 (s)	0.319	0.366	-14.7	113	-0.02	10.76	
47	freon 113	0.436	0.383	12.2	85	-0.03	6.58	
48	methacrylonitrile	0.114	0.140	-22.8#	126	-0.02	9.84	
49	1,1,1-trichloroethane	0.730	0.741	-1.5	104	-0.02	10.25	
50	cyclohexane	0.787	0.775	1.5	97	-0.01	10.31	
51 m	tert amyl alcohol			-----NA-----				
52 m	iso-octane	1.936	1.765	8.8	90	-0.02	10.78	
53 I	1,4-difluorobenzene	1.000	1.000	0.0	102	-0.02	11.33	
54	epichlorohydrin	0.026	0.029	-11.5	116	-0.02	13.05	
55	n-butyl alcohol	0.011	0.012	-9.1	121	-0.01	11.56	
56	carbon tetrachloride	0.536	0.542	-1.1	103	-0.03	10.49	
57	1,1-dichloropropene	0.440	0.448	-1.8	100	-0.01	10.47	
58	hexane	0.499	0.451	9.6	92	-0.02	8.20	
59	benzene	1.385	1.406	-1.5	103	-0.02	10.81	
60	tert-amyl methyl ether	1.153	1.131	1.9	102	-0.02	10.86	
61	heptane	0.275	0.255	7.3	92	-0.02	11.02	
62	isopropyl acetate	0.841	0.906	-7.7	112	-0.01	10.76	
63	1,2-dichloroethane	0.356	0.404	-13.5	111	-0.01	10.88	
64	trichloroethylene	0.343	0.324	5.5	95	-0.02	11.75	
65 m	ethyl acrylate			-----NA-----				
66 m	tert amyl ethyl ether			-----NA-----				
67	2-nitropropane	0.085	0.118	-38.8#	139	-0.02	12.86	
68	2-chloroethyl vinyl ether	0.124	0.158	-27.4#	135	-0.01	12.87	
69	methyl methacrylate	0.164	0.193	-17.7	118	-0.02	12.16	
70	1,2-dichloropropane	0.384	0.415	-8.1	110	-0.02	12.13	
71	dibromomethane	0.176	0.189	-7.4	106	-0.02	12.35	
72	methylcyclohexane	0.716	0.626	12.6	89	-0.02	12.01	
73	bromodichloromethane	0.444	0.466	-5.0	109	-0.02	12.53	
74	cis-1,3-dichloropropene	0.546	0.592	-8.4	109	-0.01	13.15	
75 S	toluene-d8 (s)	1.230	1.260	-2.4	103	-0.02	13.51	
76	4-methyl-2-pentanone	0.123	0.139	-13.0	119	-0.02	13.29	
77	toluene	0.841	0.817	2.9	98	-0.02	13.61	
78	3-methyl-1-butanol	0.018	0.019	-5.6	115	-0.01	13.36	
79	trans-1,3-dichloropropene	0.470	0.513	-9.1	112	-0.01	13.93	
80	ethyl methacrylate	0.358	0.393	-9.8	111	-0.02	13.91	
81	1,1,2-trichloroethane	0.239	0.242	-1.3	108	-0.02	14.21	
82	2-hexanone	0.094	0.137	-45.7#	134	-0.02	14.45	
83 I	chlorobenzene-d5	1.000	1.000	0.0	100	-0.02	15.54	
84	3,3-Dimethyl-1-butanol	0.050	0.053	-6.0	120	-0.02	14.70	
85	tetrachloroethene	0.359	0.302	15.9	86	-0.02	14.38	
86	1,3-dichloropropane	0.534	0.546	-2.2	110	-0.01	14.45	
87	butyl acetate	0.221	0.245	-10.9	116	0.00	14.56	
88	dibromochloromethane	0.387	0.380	1.8	105	-0.02	14.79	
89	1,2-dibromoethane	0.301	0.302	-0.3	107	-0.02	14.98	
90 m	n-butyl ether	2.145	2.250	-4.9	110	-0.01	15.49	
91	chlorobenzene	1.100	1.049	4.6	100	-0.02	15.58	
92	1,1,1,2-tetrachloroethane	0.476	0.458	3.8	104	0.00	15.68	
93	ethylbenzene	1.890	1.837	2.8	100	-0.01	15.66	
94	m,p-xylene	0.714	0.691	3.2	99	-0.01	15.80	
95	o-xylene	0.759	0.753	0.8	101	-0.02	16.35	
96	styrene	1.230	1.159	5.8	100	-0.01	16.37	
97	bromoform	0.272	0.268	1.5	106	-0.02	16.71	
98 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	98	-0.01	18.30	

Continuing Calibration Summary

Job Number: JC7897

Sample: VX6848-CC6845

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: X159547.D

99	isopropylbenzene	3.818	3.843	-0.7	100	-0.02	16.78
100	cis-1,4-dichloro-2-butene			-----NA-----			
101	Cyclohexanone	0.140	0.245	-75.0#	185	-0.02	17.01
102 S	4-bromofluorobenzene (s)	0.907	0.964	-6.3	103	-0.01	17.03
103	bromobenzene	0.981	0.940	4.2	99	0.00	17.25
104	1,1,2,2-tetrachloroethane	0.882	0.957	-8.5	113	0.00	17.19
105	trans-1,4-dichloro-2-bute	0.216	0.279	-29.2#	124	-0.01	17.24
106	1,2,3-trichloropropane	0.182	0.212	-16.5	110	0.00	17.26
107	n-propylbenzene	4.423	4.298	2.8	100	-0.01	17.26
108 m	4-ethyltoluene			-----NA-----			
109	2-chlorotoluene	0.937	0.919	1.9	99	-0.01	17.43
110	4-chlorotoluene	2.590	2.667	-3.0	104	-0.02	17.54
111	1,3,5-trimethylbenzene	3.286	3.257	0.9	102	-0.01	17.44
112	tert-butylbenzene	2.880	2.760	4.2	98	-0.01	17.82
113	pentachloroethane	0.690	0.711	-3.0	109	-0.01	17.92
114	1,2,4-trimethylbenzene	3.362	3.287	2.2	102	-0.01	17.87
115 m	1,2,3-trimethylbenzene			-----NA-----			
116	sec-butylbenzene	4.632	4.479	3.3	99	-0.01	18.04
117	1,3-dichlorobenzene	1.977	1.903	3.7	101	0.00	18.25
118	p-isopropyltoluene	4.070	3.754	7.8	99	-0.01	18.17
119	1,4-dichlorobenzene	1.976	1.853	6.2	101	0.00	18.33
120	1,2-dichlorobenzene	2.014	1.978	1.8	104	0.00	18.72
121	benzyl chloride	1.630	1.811	-11.1	114	0.00	18.46
122 m	1,4-diethylbenzene			-----NA-----			
123	n-butylbenzene	2.052	2.035	0.8	102	-0.01	18.59
124 m	1,2,4,5-tetramethylbenzen			-----NA-----			
125	1,2-dibromo-3-chloropropa	0.235	0.234	0.4	107	-0.01	19.46
126	1,3,5-trichlorobenzene	2.192	2.090	4.7	105	-0.01	19.59
127	hexachlorobutadiene	1.110	1.044	5.9	96	-0.01	20.26
128	naphthalene	4.212	4.267	-1.3	106	0.00	20.44
129	1,2,4-trichlorobenzene	2.255	2.076	7.9	106	-0.01	20.18
130 m	1,2,3-trichlorobenzene	2.239	2.131	4.8	103	-0.01	20.66
131	hexachloroethane	0.680	0.668	1.8	101	0.00	18.95

(#= Out of Range
x159466.D MX6845.MSPCC's out = 0 CCC's out = 0
Tue Nov 10 16:11:18 2015 GCMSX6.9.10
6



GC/MS Volatiles

Raw Data

7

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Jessica Reitan-Chu
 11/12/15 13:52

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
 Data File : x159519.D
 Acq On : 7 Nov 2015 3:11 pm
 Operator : paypalr
 Sample : jc7897-1
 Misc : MS94128,VX6848,6.2,,,1
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 12 13:20:22 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MX6845.M
 Quant Title : Method 8260B/8260C, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri Nov 06 10:32:41 2015
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) tert butyl alcohol-d9	7.46	65	103004	500.00	ug/L	-0.02
4) pentafluorobenzene	10.17	168	188637	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.35	114	230683	50.00	ug/L	0.00
83) chlorobenzene-d5	15.56	117	209967	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	18.32	152	112213	50.00	ug/L	0.00

System Monitoring Compounds

45) dibromofluoromethane (s)	10.24	113	72880	53.88	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	107.76%
46) 1,2-dichloroethane-d4 (s)	10.78	65	72209	59.93	ug/L	0.00
Spiked Amount	50.000	Range	68 - 124	Recovery	=	119.86%
75) toluene-d8 (s)	13.53	98	290673	51.23	ug/L	0.00
Spiked Amount	50.000	Range	77 - 125	Recovery	=	102.46%
102) 4-bromofluorobenzene (s)	17.05	95	106825	52.46	ug/L	0.01
Spiked Amount	50.000	Range	72 - 130	Recovery	=	104.92%

Target Compounds

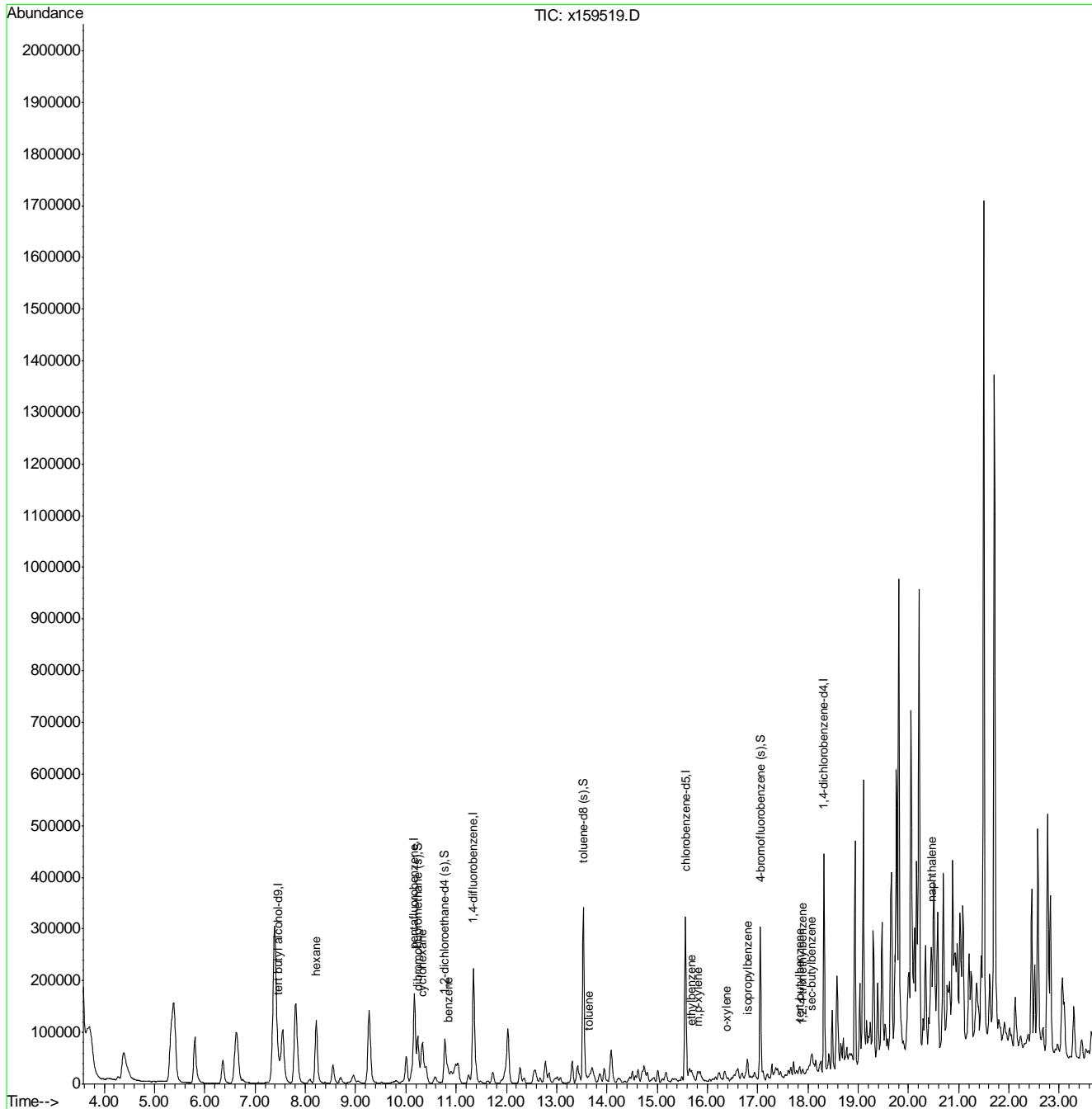
				Qvalue
50) cyclohexane	10.33	84	48094	16.20 ug/L 96
58) hexane	8.22	57	98566	42.77 ug/L 96
59) benzene	10.84	78	22303	3.49 ug/L 91
77) toluene	13.64	92	3487m	0.90 ug/L
93) ethylbenzene	15.68	91	9902	1.25 ug/L 97
94) m,p-xylene	15.82	106	2842	0.95 ug/L 84
95) o-xylene	16.38	106	1574	0.49 ug/L # 55
99) isopropylbenzene	16.80	105	19126	2.23 ug/L 96
112) tert-butylbenzene	17.83	119	6191	0.96 ug/L 96
114) 1,2,4-trimethylbenzene	17.89	105	1939	0.26 ug/L 83
116) sec-butylbenzene	18.06	105	11670	1.12 ug/L 92
128) naphthalene	20.46	128	102182	10.81 ug/L 98

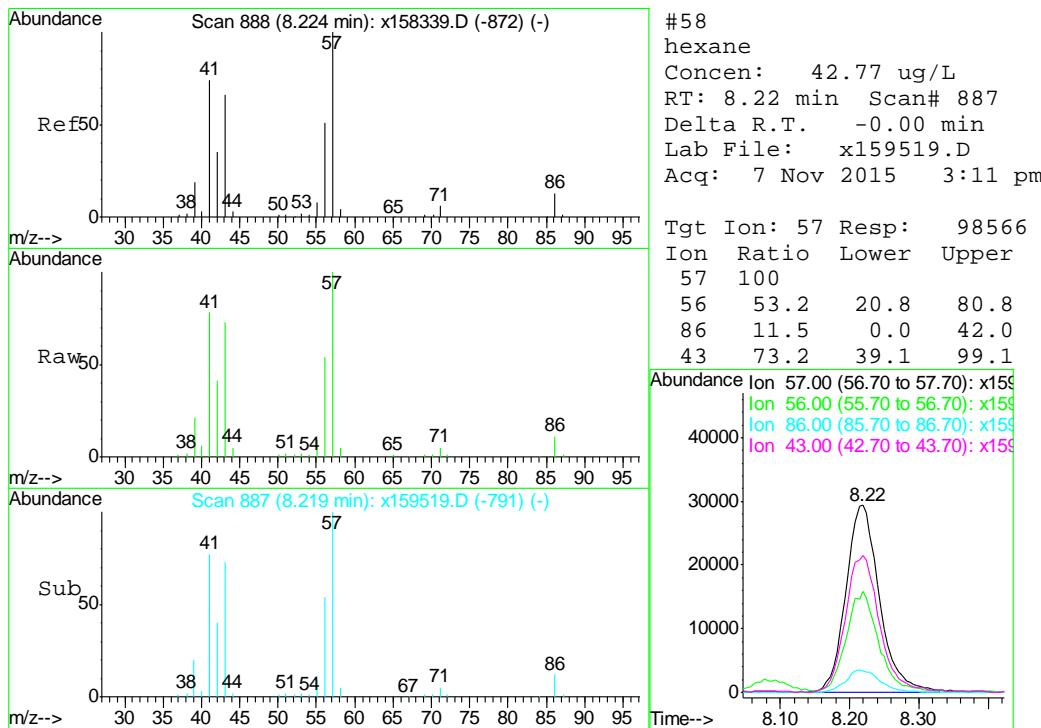
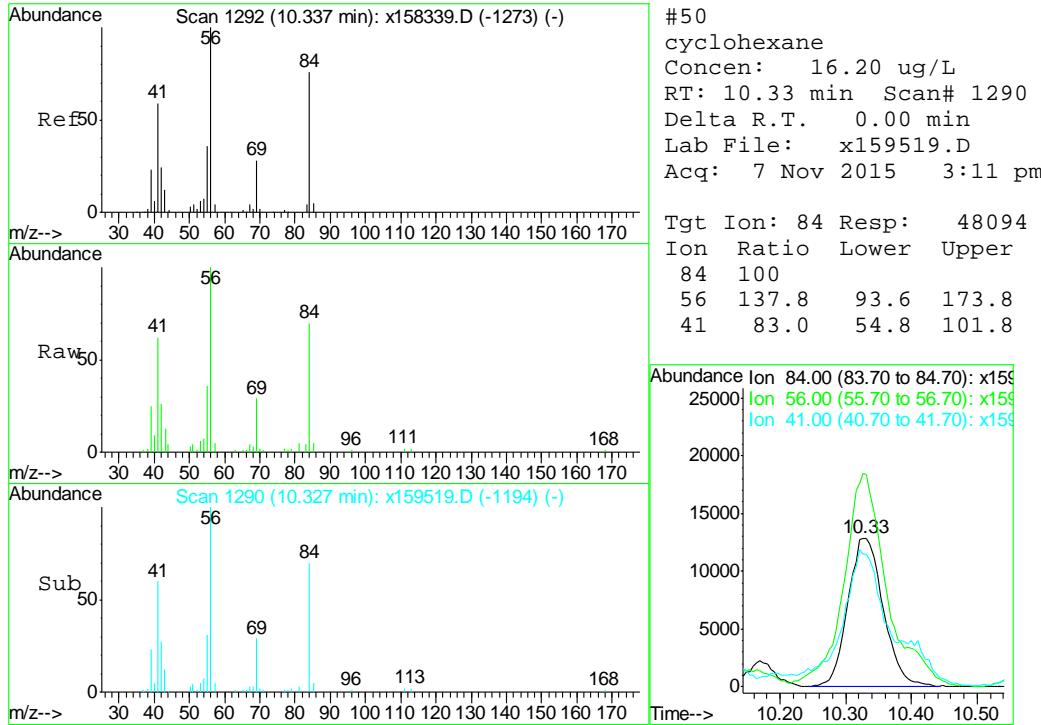
(#) = qualifier out of range (m) = manual integration (+) = signals summed

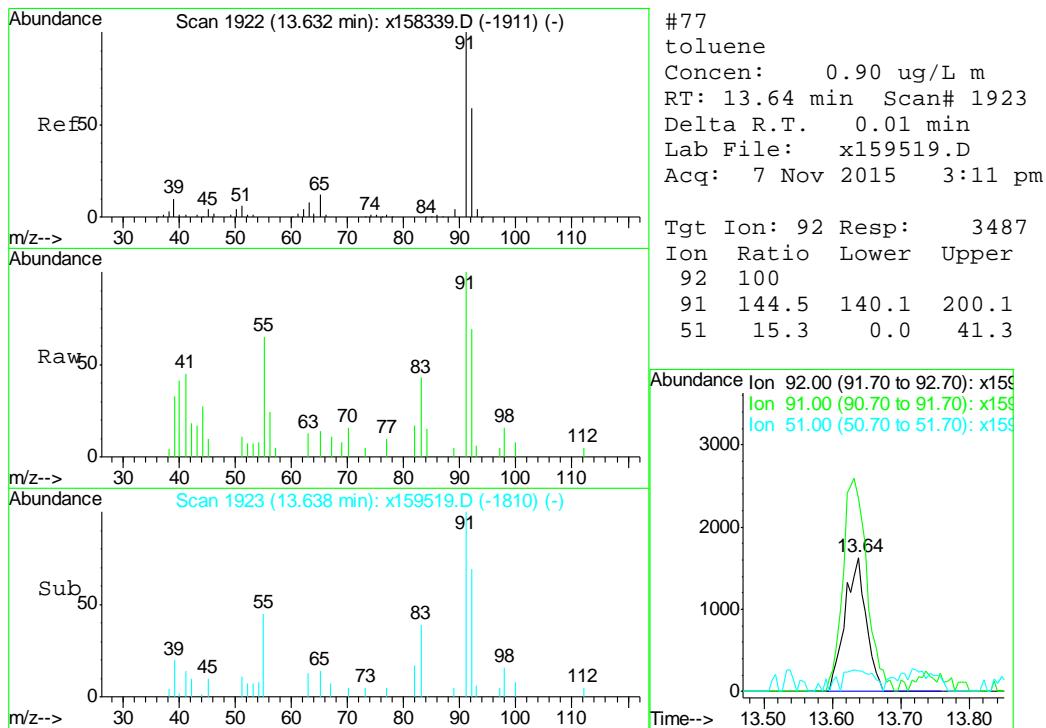
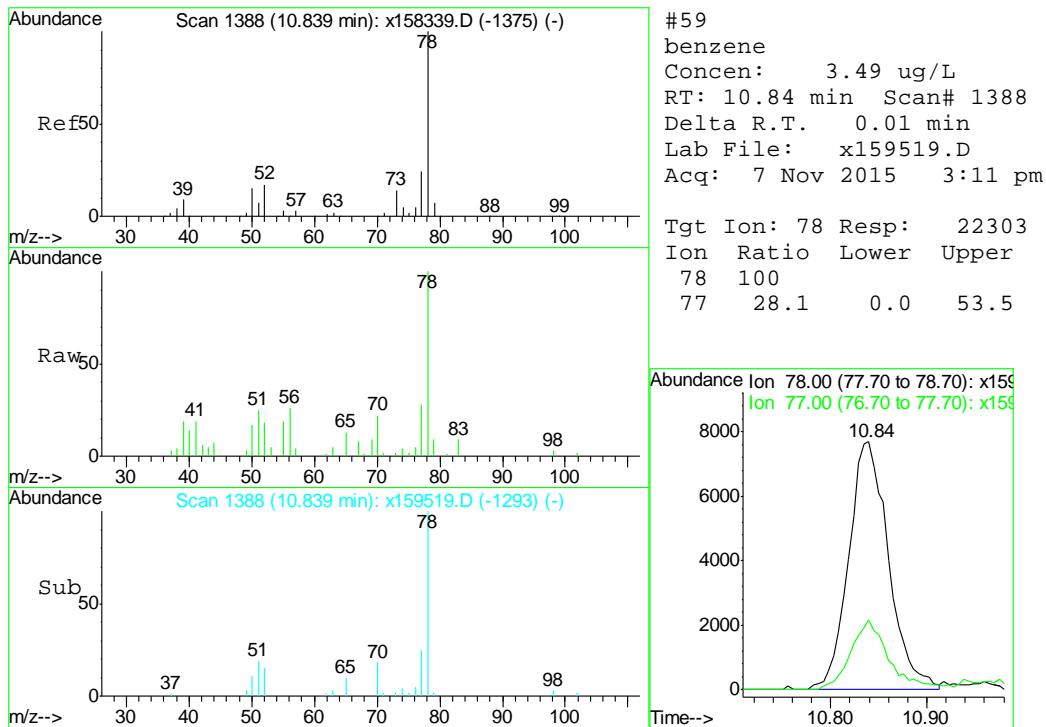
Quantitation Report (QT Reviewed)

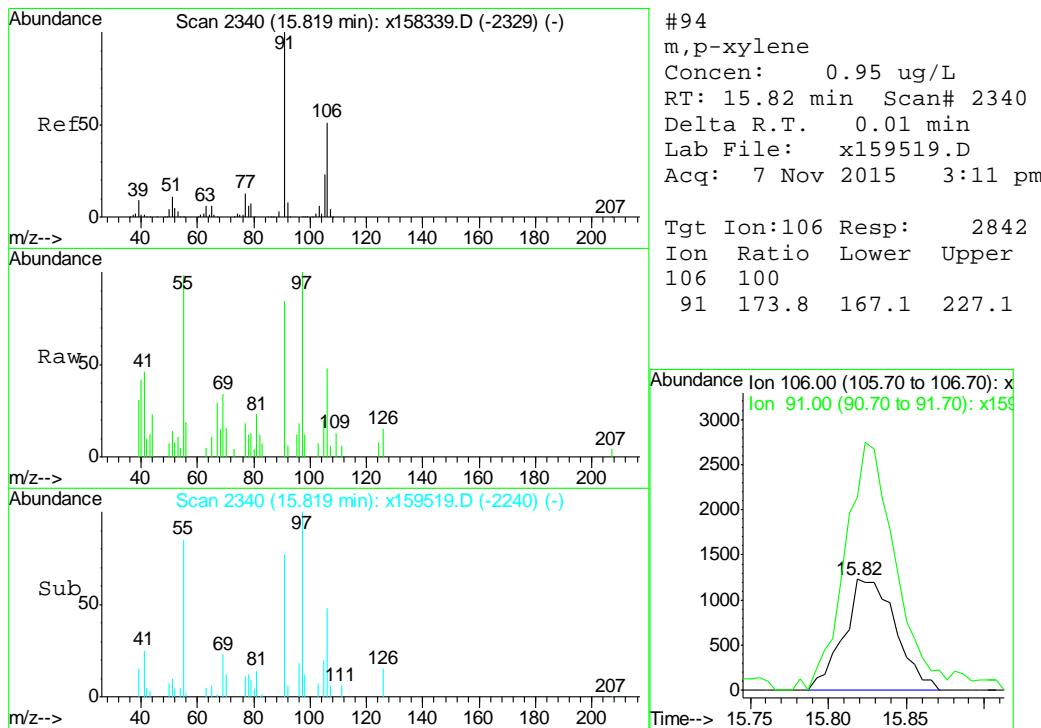
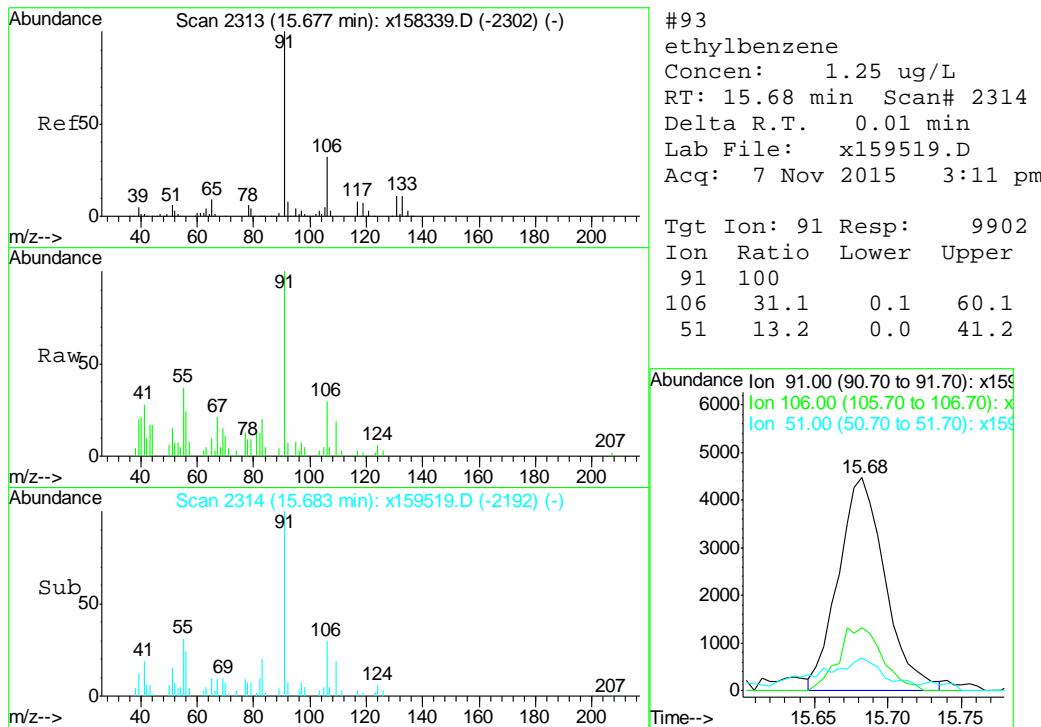
Data Path : C:\msdchem\1\data\
 Data File : x159519.D
 Acq On : 7 Nov 2015 3:11 pm
 Operator : payalr
 Sample : jc7897-1
 Misc : MS94128,VX6848,6.2,,,1
 ALS Vial : 8 Sample Multiplier: 1

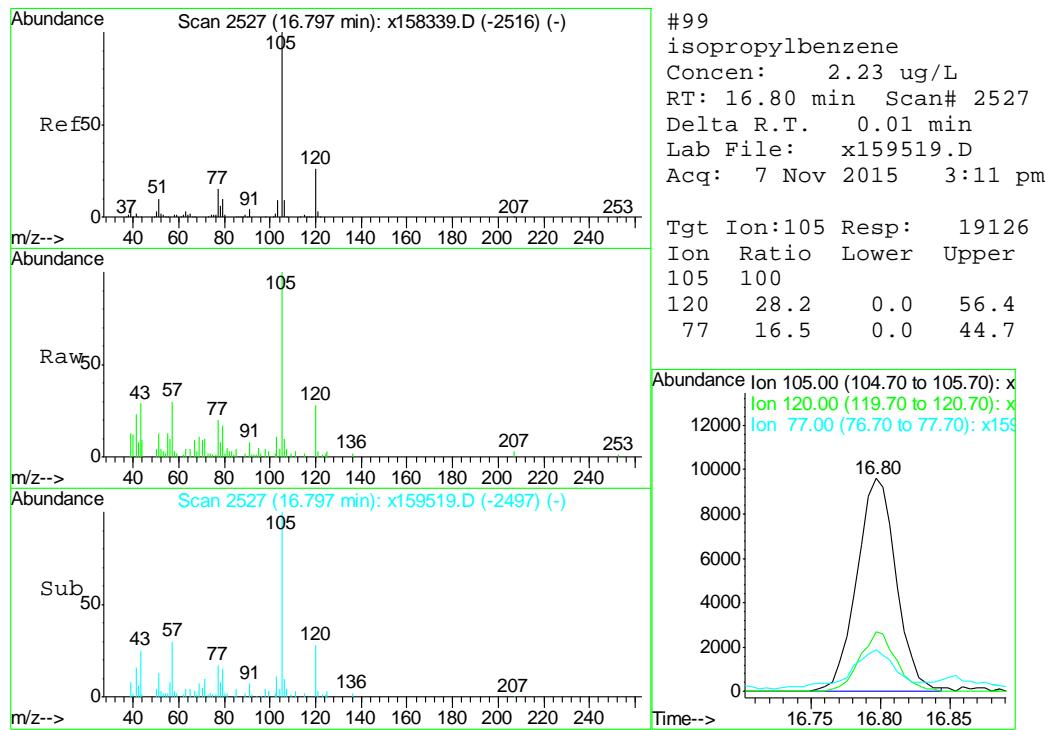
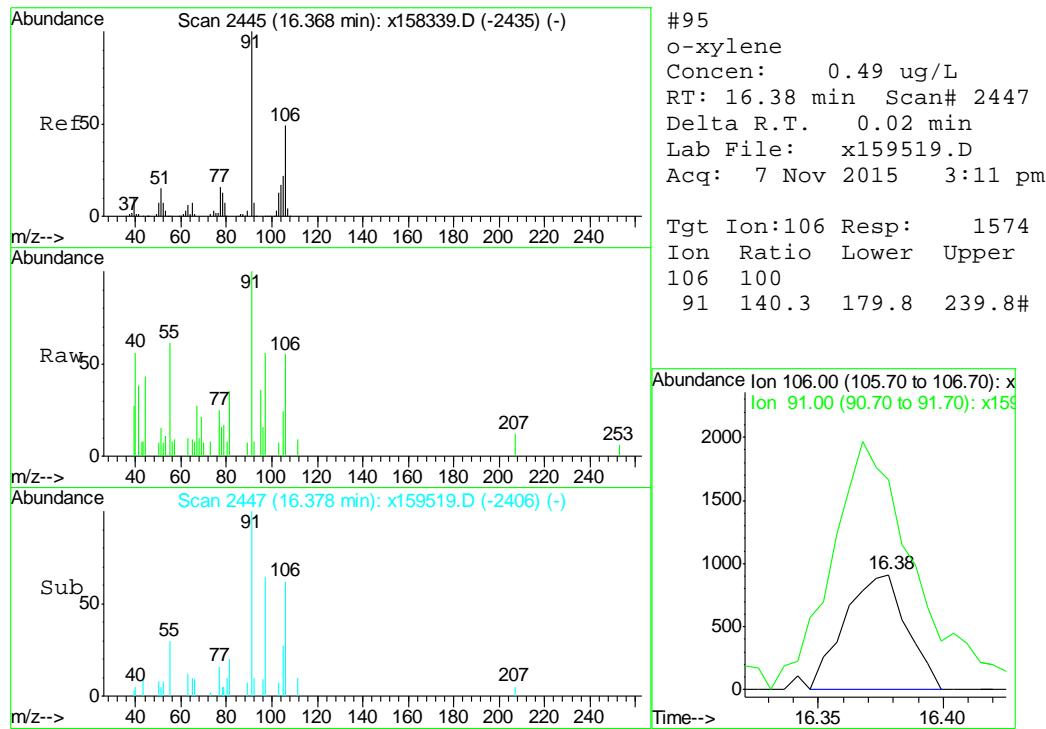
Quant Time: Nov 12 13:20:22 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MX6845.M
 Quant Title : Method 8260B/8260C, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri Nov 06 10:32:41 2015
 Response via : Initial Calibration

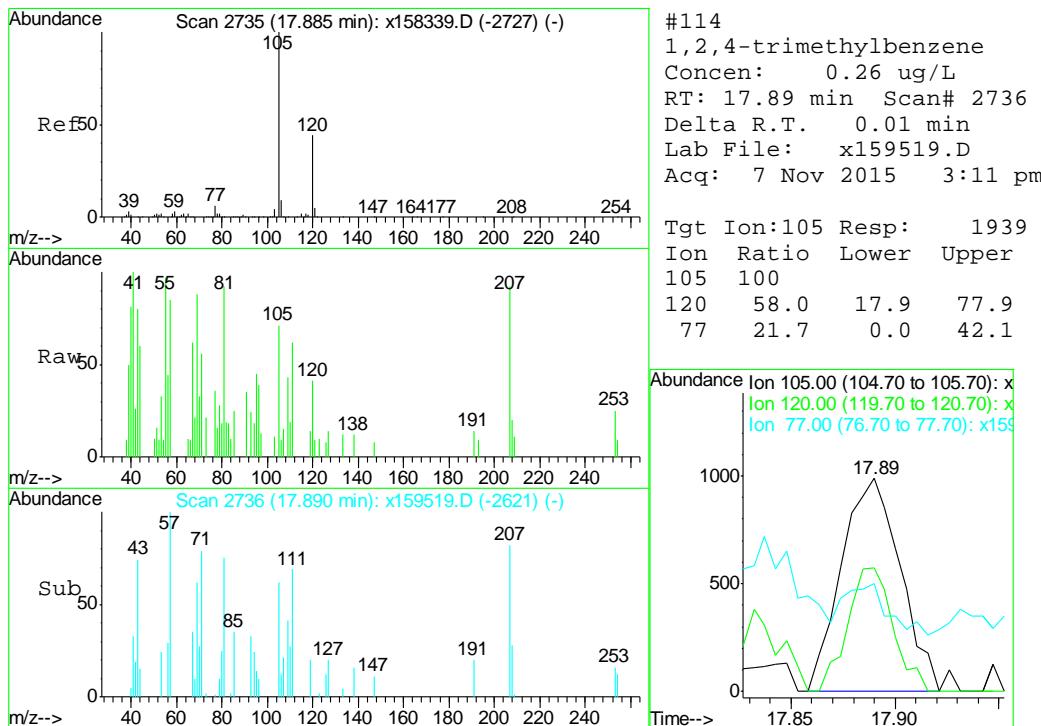
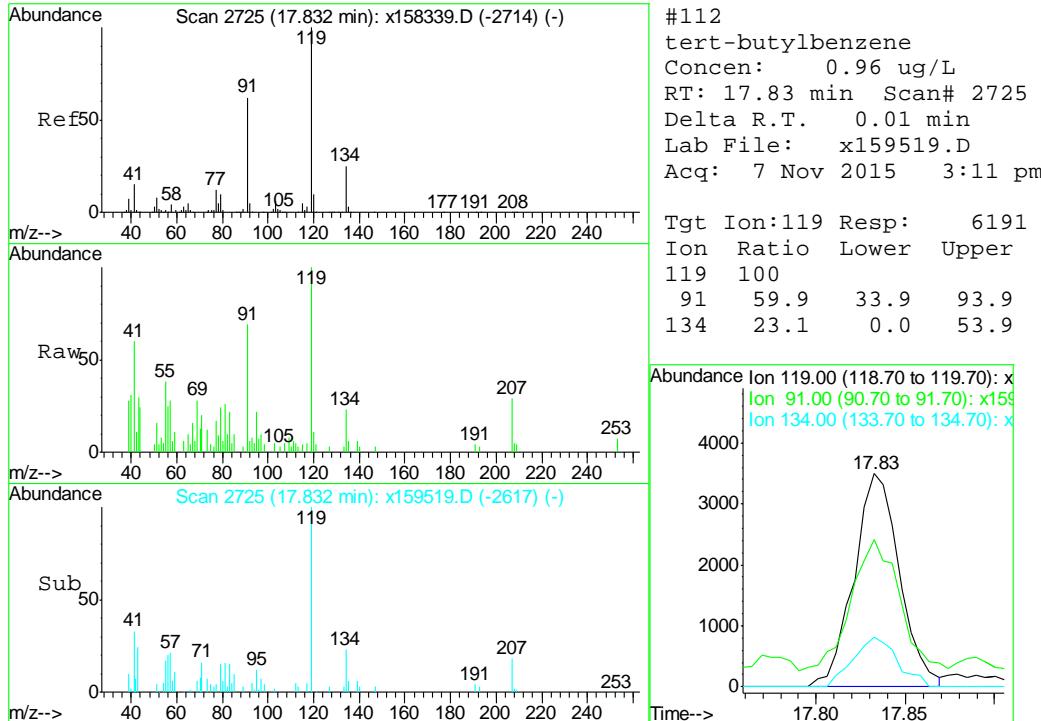


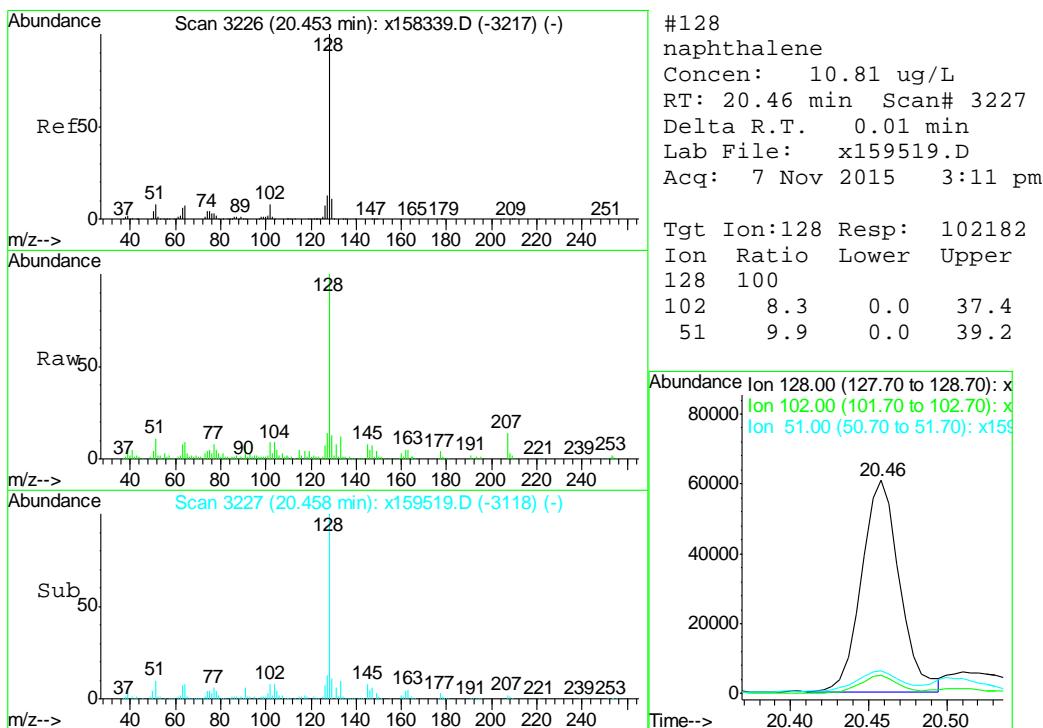
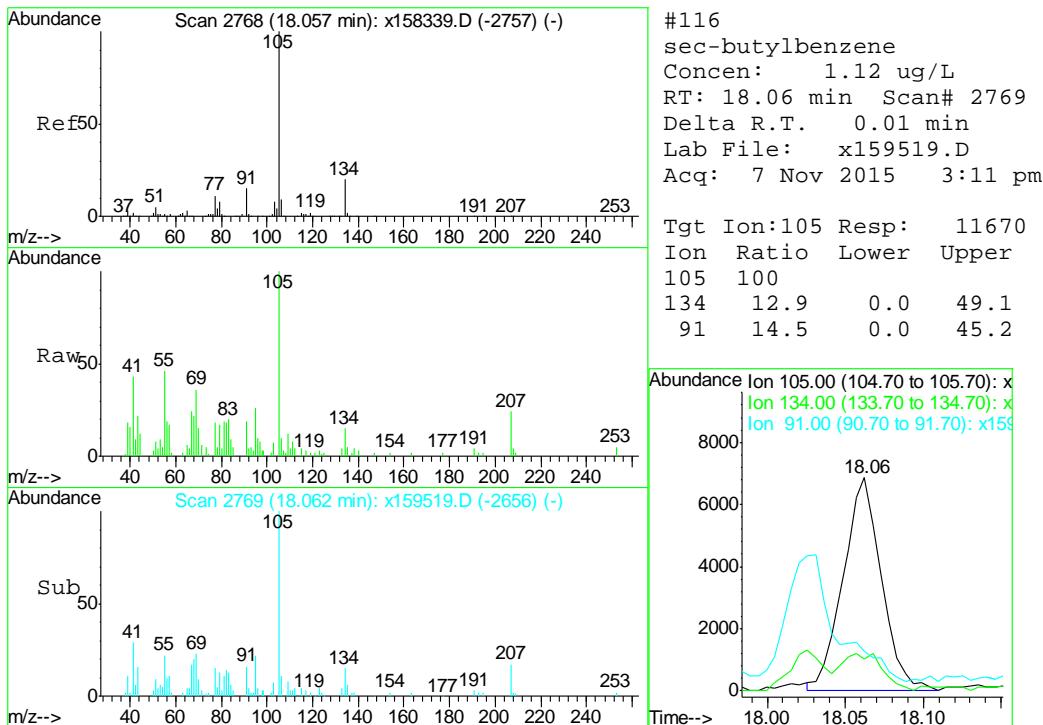












Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
 Data File : V157428.D
 Acq On : 10 Nov 2015 7:32 pm
 Operator : paypalr
 Sample : jc7897-2
 Misc : MS94128, VV6649, 6.4,,,1
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Nov 13 14:36:40 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MVS6633.M
 Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Thu Oct 29 11:45:05 2015
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.68	65	181988	500.00	ug/L	0.00
4) pentafluorobenzene	9.91	168	432857	50.00	ug/L	0.00
52) 1,4-difluorobenzene	10.86	114	511983	50.00	ug/L	0.00
82) chlorobenzene-d5	14.27	117	476274	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.87	152	277976	50.00	ug/L	0.00

System Monitoring Compounds						
48) dibromofluoromethane (s)	10.00	113	171676	49.96	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	99.92%
49) 1,2-dichloroethane-d4 (s)	10.43	65	152304	44.83	ug/L	0.00
Spiked Amount	50.000	Range	68 - 124	Recovery	=	89.66%
74) toluene-d8 (s)	12.59	98	626993	50.57	ug/L	0.00
Spiked Amount	50.000	Range	77 - 125	Recovery	=	101.14%
97) 4-bromofluorobenzene (s)	15.57	95	238704	50.60	ug/L	0.00
Spiked Amount	50.000	Range	72 - 130	Recovery	=	101.20%

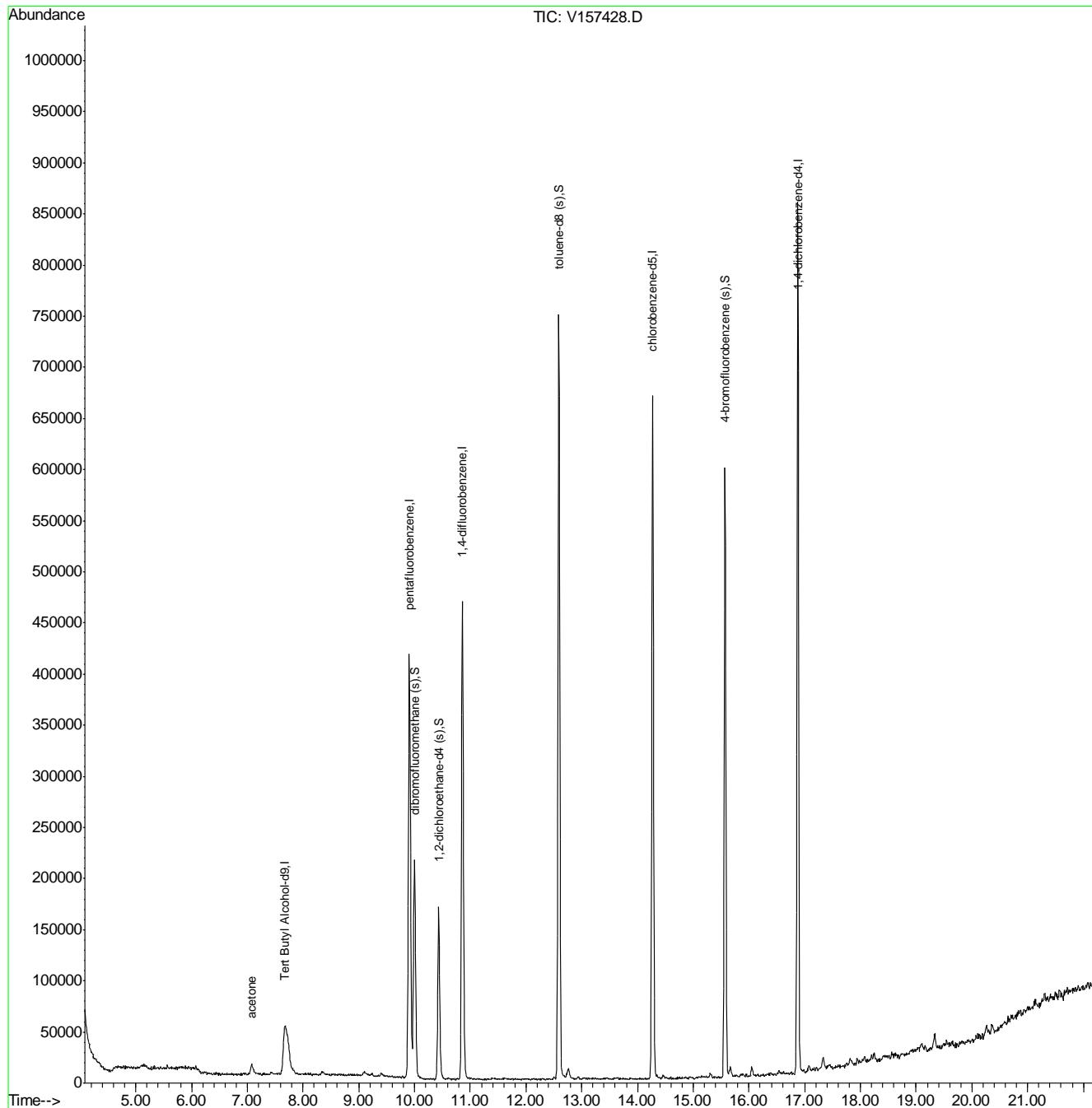
Target Compounds					Qvalue
20) acetone	7.08	58	7444	26.00	ug/L

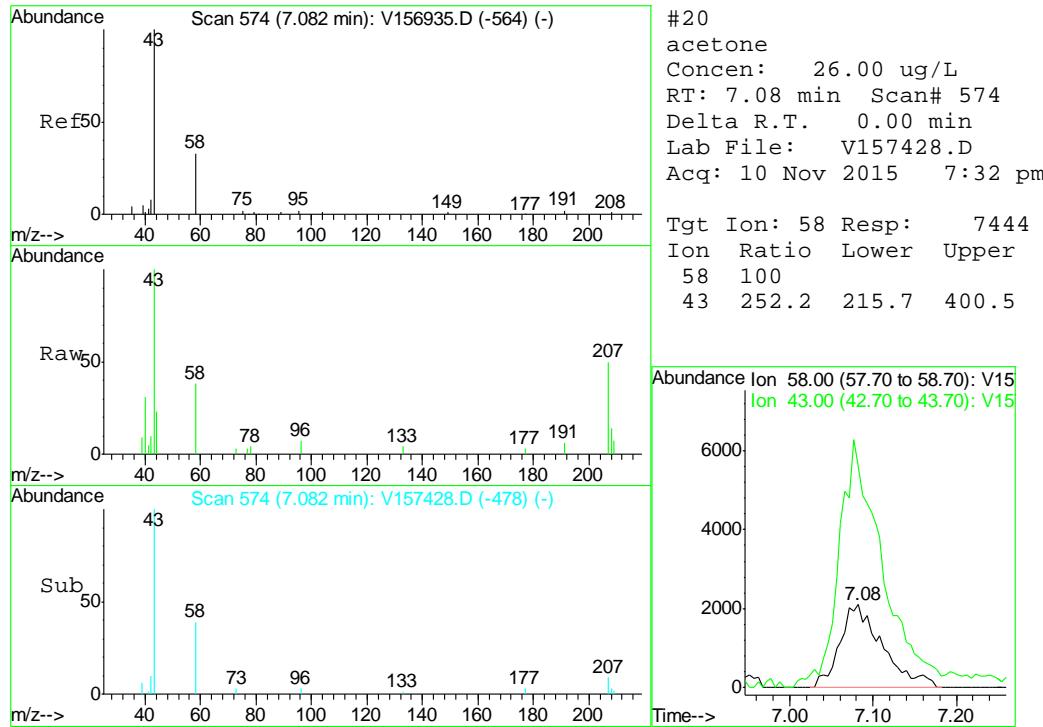
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
 Data File : V157428.D
 Acq On : 10 Nov 2015 7:32 pm
 Operator : paypalr
 Sample : jc7897-2
 Misc : MS94128,VV6649,6.4,,,1
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Nov 13 14:36:40 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MVS6633.M
 Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Thu Oct 29 11:45:05 2015
 Response via : Initial Calibration





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9624-9625\
 Data File : d235765.D
 Acq On : 12 Nov 2015 10:20 am
 Operator : BenM
 Sample : jc7897-3
 Misc : ms94128, vd9625, 6.0,,100,10,1
 ALS Vial : 47 Sample Multiplier: 1

Quant Time: Nov 12 13:07:41 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M
 Quant Title : SW-846 Method 8260C
 QLast Update : Thu Nov 05 07:40:57 2015
 Response via : Initial Calibration

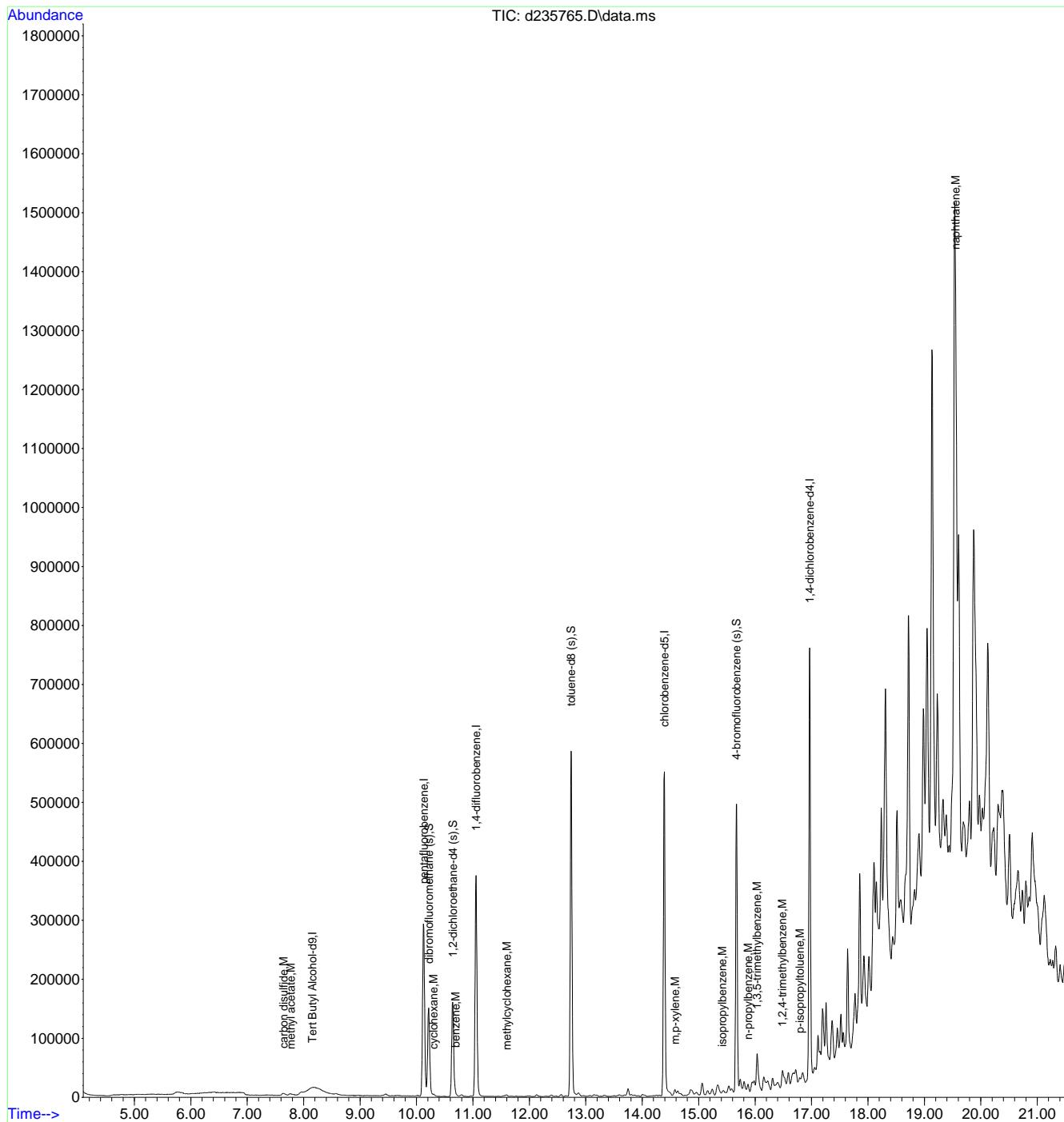
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	8.156	65	179764	500.00	ug/L	# 0.18
4) pentafluorobenzene	10.128	168	259121	50.00	ug/L	0.00
55) 1,4-difluorobenzene	11.054	114	357797	50.00	ug/L	0.00
87) chlorobenzene-d5	14.391	117	344698	50.00	ug/L	0.00
101) 1,4-dichlorobenzene-d4	16.969	152	211894	50.00	ug/L	0.00
System Monitoring Compounds						
48) dibromofluoromethane (s)	10.217	113	116678	48.87	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 97.74%			
49) 1,2-dichloroethane-d4 (s)	10.641	65	140156	49.08	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery = 98.16%			
79) toluene-d8 (s)	12.738	98	465780	50.98	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery = 101.96%			
103) 4-bromofluorobenzene (s)	15.667	95	200439	50.26	ug/L	-0.01
Spiked Amount 50.000	Range 72 - 130		Recovery = 100.52%			
Target Compounds						
				Qvalue		
27) carbon disulfide	7.644	76	12137	1.14 ug/L		95
30) methyl acetate	7.769	74	1751	5.29 ug/L	#	35
56) cyclohexane	10.301	84	1146	0.24 ug/L		79
64) benzene	10.693	78	2224	0.21 ug/L		86
75) methylcyclohexane	11.598	83	1416	0.29 ug/L		82
97) m,p-xylene	14.579	106	2807	0.57 ug/L		85
102) isopropylbenzene	15.416	105	3402	0.23 ug/L		88
109) n-propylbenzene	15.876	91	5465	0.32 ug/L		98
113) 1,3,5-trimethylbenzene	16.033	105	30931	2.36 ug/L		99
116) 1,2,4-trimethylbenzene	16.483	105	12104	0.91 ug/L		99
119) p-isopropyltoluene	16.791	119	5358	0.37 ug/L		86
132) naphthalene	19.553	128	72424	7.21 ug/L		96

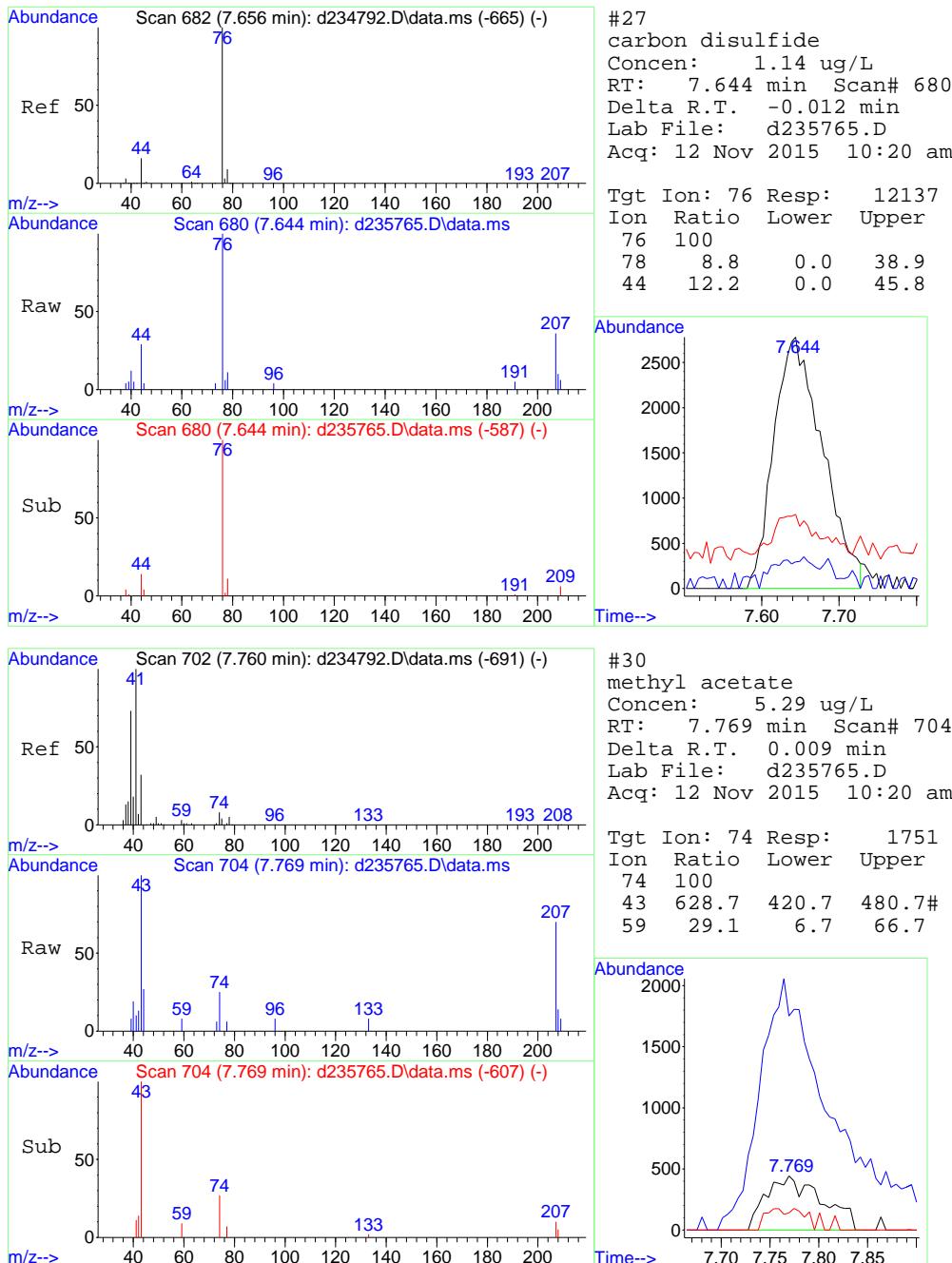
(#) = qualifier out of range (m) = manual integration (+) = signals summed

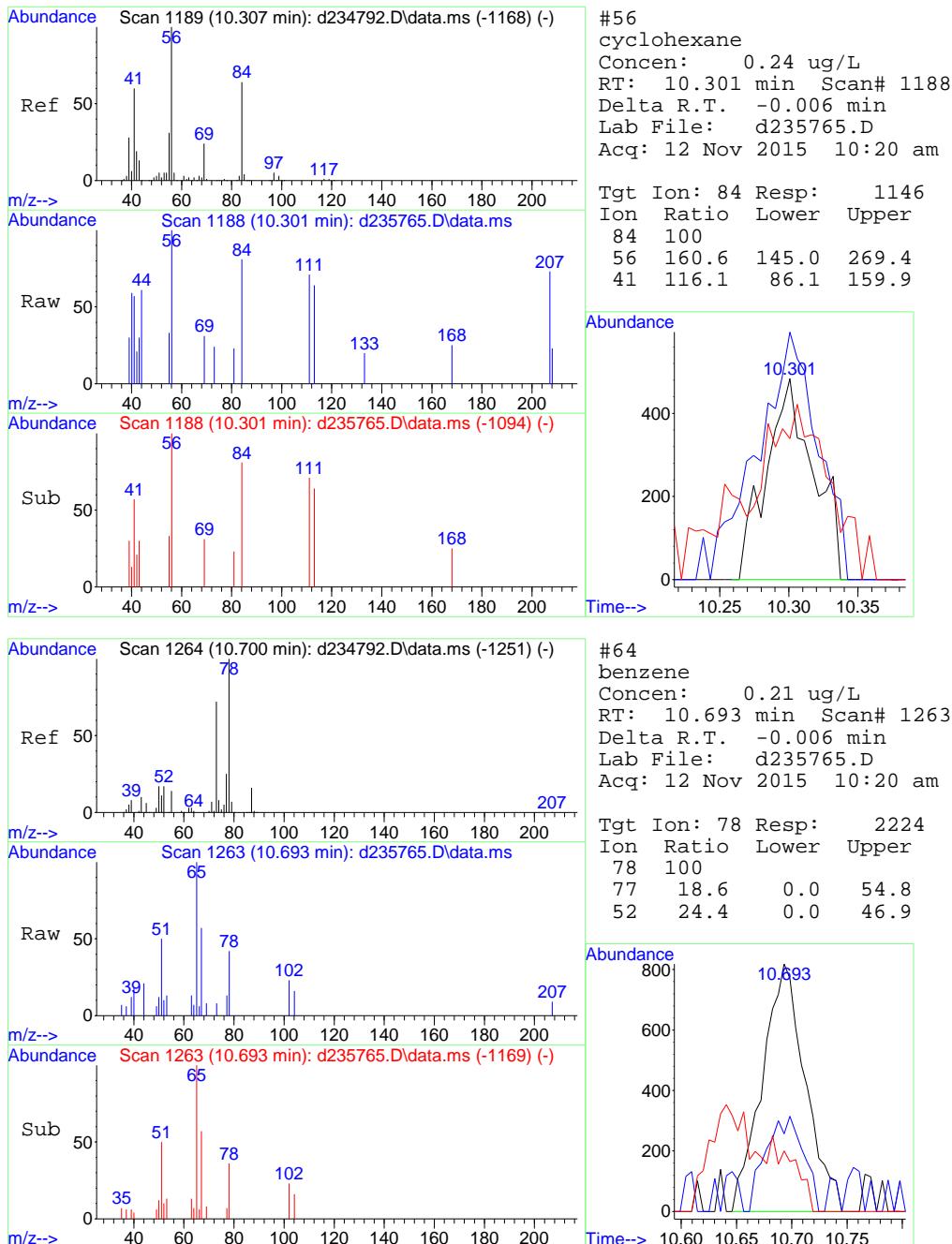
Quantitation Report (QT Reviewed)

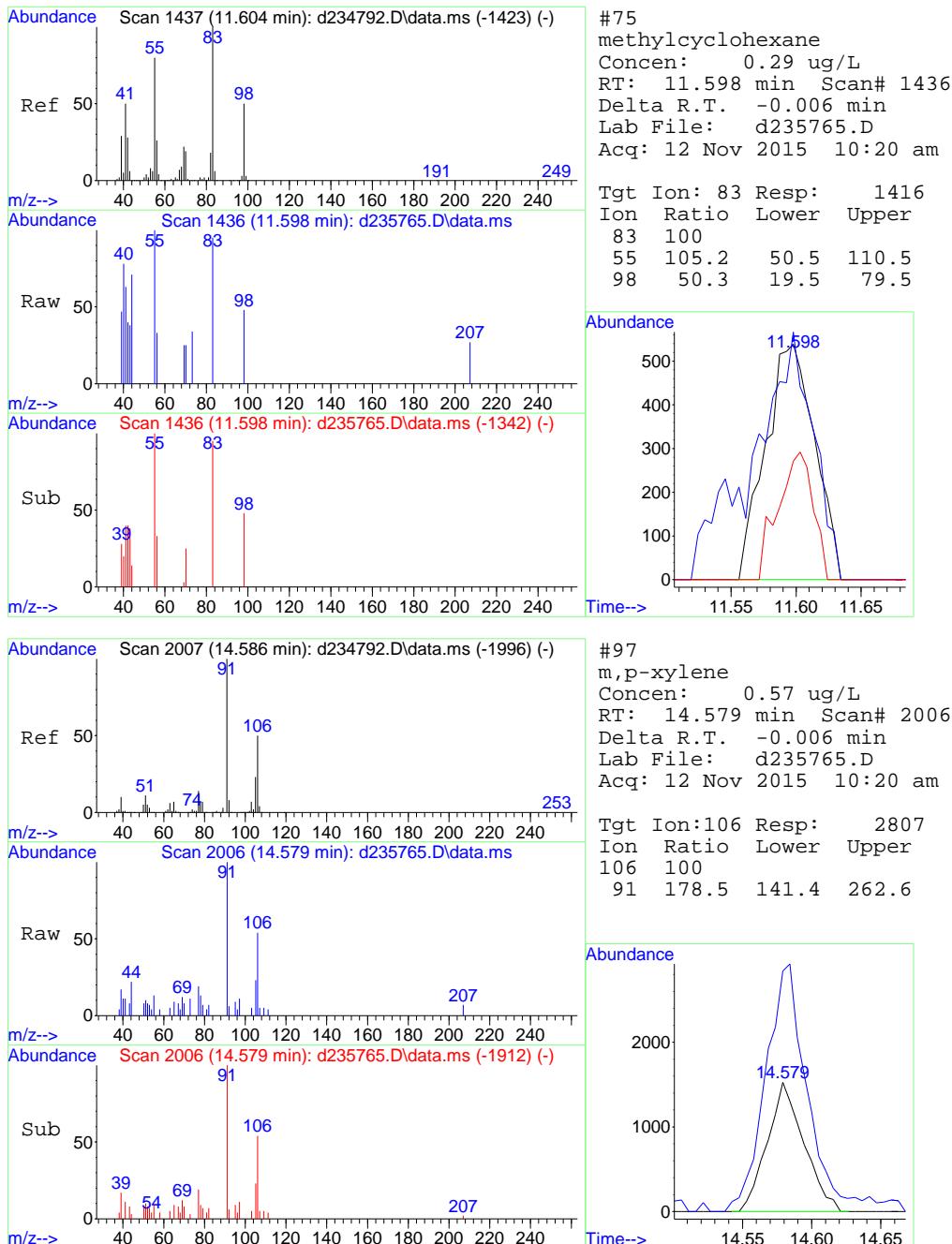
Data Path : C:\msdchem\1\DATA\D\vd9624-9625\
 Data File : d235765.D
 Acq On : 12 Nov 2015 10:20 am
 Operator : BenM
 Sample : jc7897-3
 Misc : ms94128, vd9625, 6.0., ,100,10,1
 ALS Vial : 47 Sample Multiplier: 1

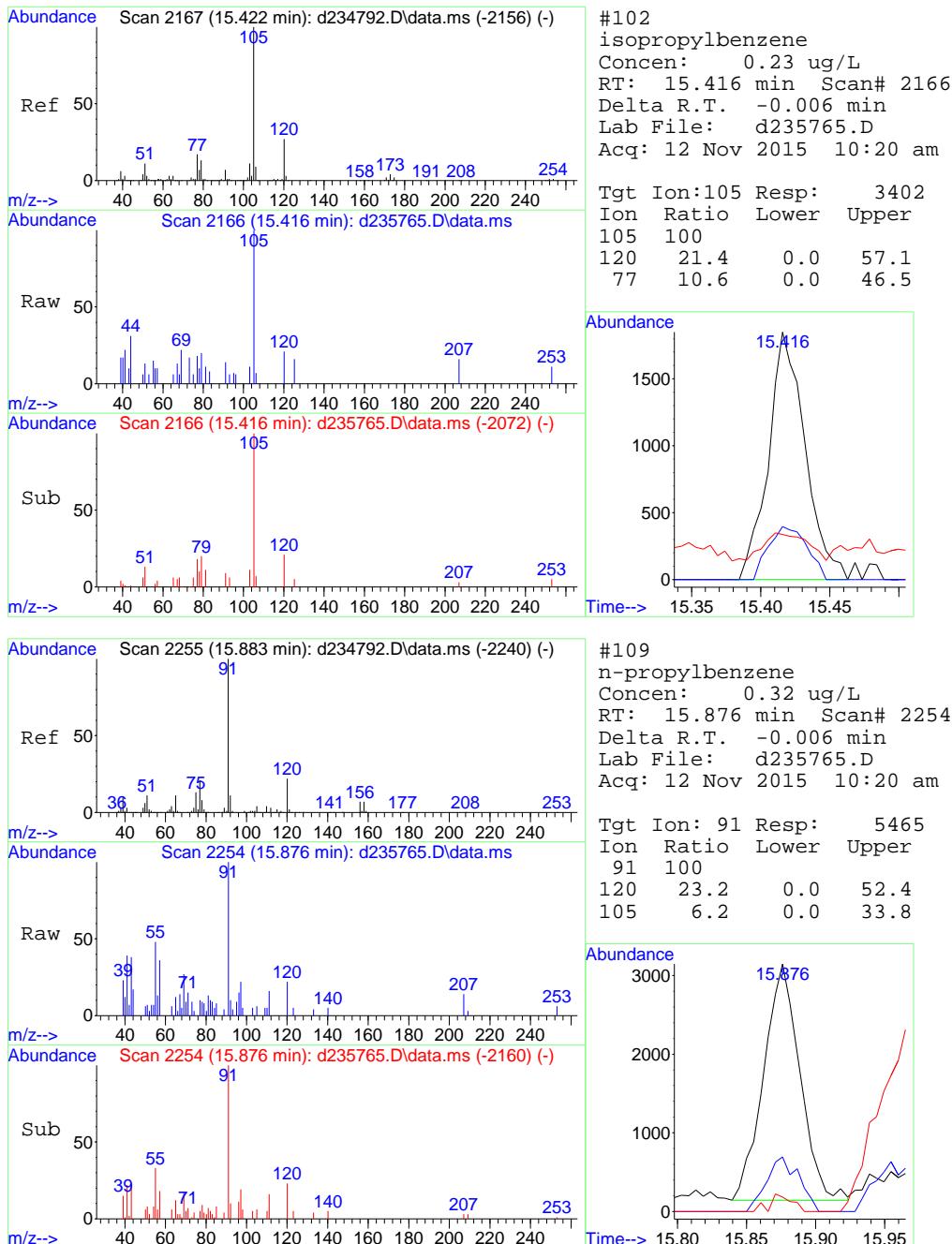
Quant Time: Nov 12 13:07:41 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M
 Quant Title : SW-846 Method 8260C
 QLast Update : Thu Nov 05 07:40:57 2015
 Response via : Initial Calibration

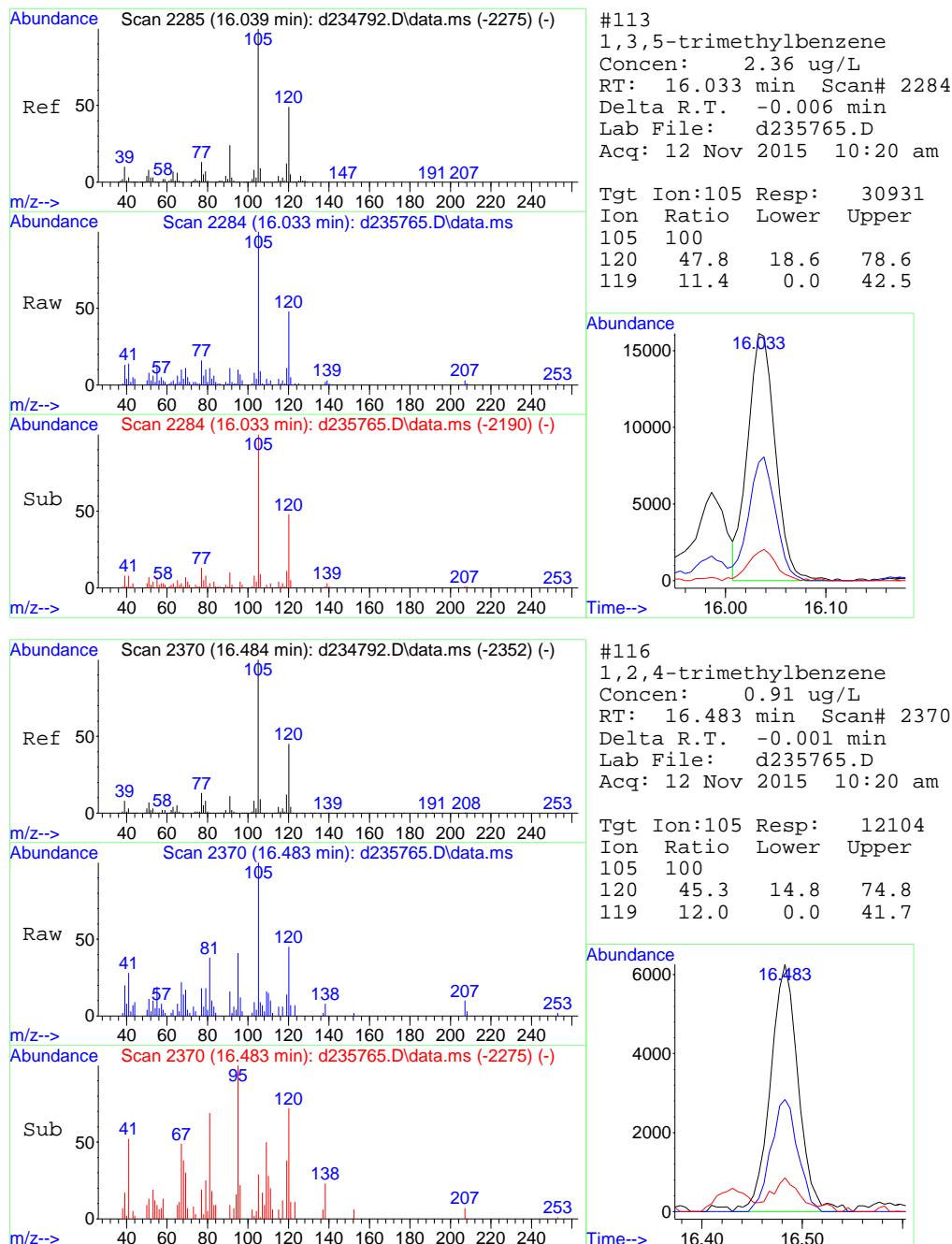


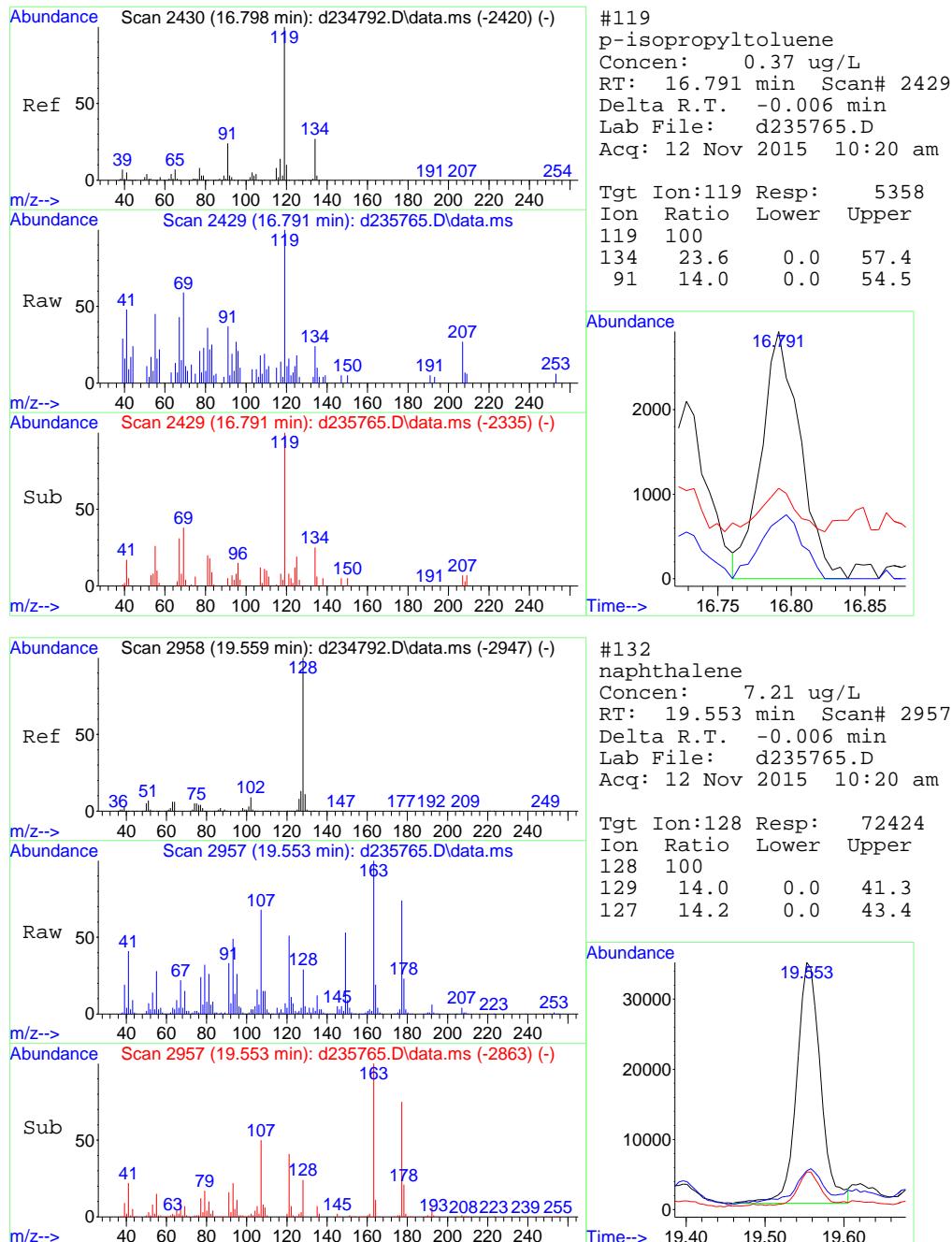












Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9624-9625\
 Data File : d235747.D
 Acq On : 12 Nov 2015 1:13 am
 Operator : BenM
 Sample : mb
 Misc : ms93980, vd9625, 10,,100,5,1
 ALS Vial : 29 Sample Multiplier: 1

Quant Time: Nov 12 07:46:18 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M
 Quant Title : SW-846 Method 8260C
 QLast Update : Thu Nov 05 07:40:57 2015
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.970	65	130962	500.00	ug/L	0.00
4) pentafluorobenzene	10.125	168	256504	50.00	ug/L	0.00
55) 1,4-difluorobenzene	11.051	114	350218	50.00	ug/L	0.00
87) chlorobenzene-d5	14.387	117	328630	50.00	ug/L	0.00
101) 1,4-dichlorobenzene-d4	16.966	152	203451	50.00	ug/L	0.00
System Monitoring Compounds						
48) dibromofluoromethane (s)	10.214	113	114539	48.46	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery =	96.92%		
49) 1,2-dichloroethane-d4 (s)	10.637	65	133568	47.25	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery =	94.50%		
79) toluene-d8 (s)	12.740	98	448781	50.19	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery =	100.38%		
103) 4-bromofluorobenzene (s)	15.669	95	190412	49.73	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery =	99.46%		

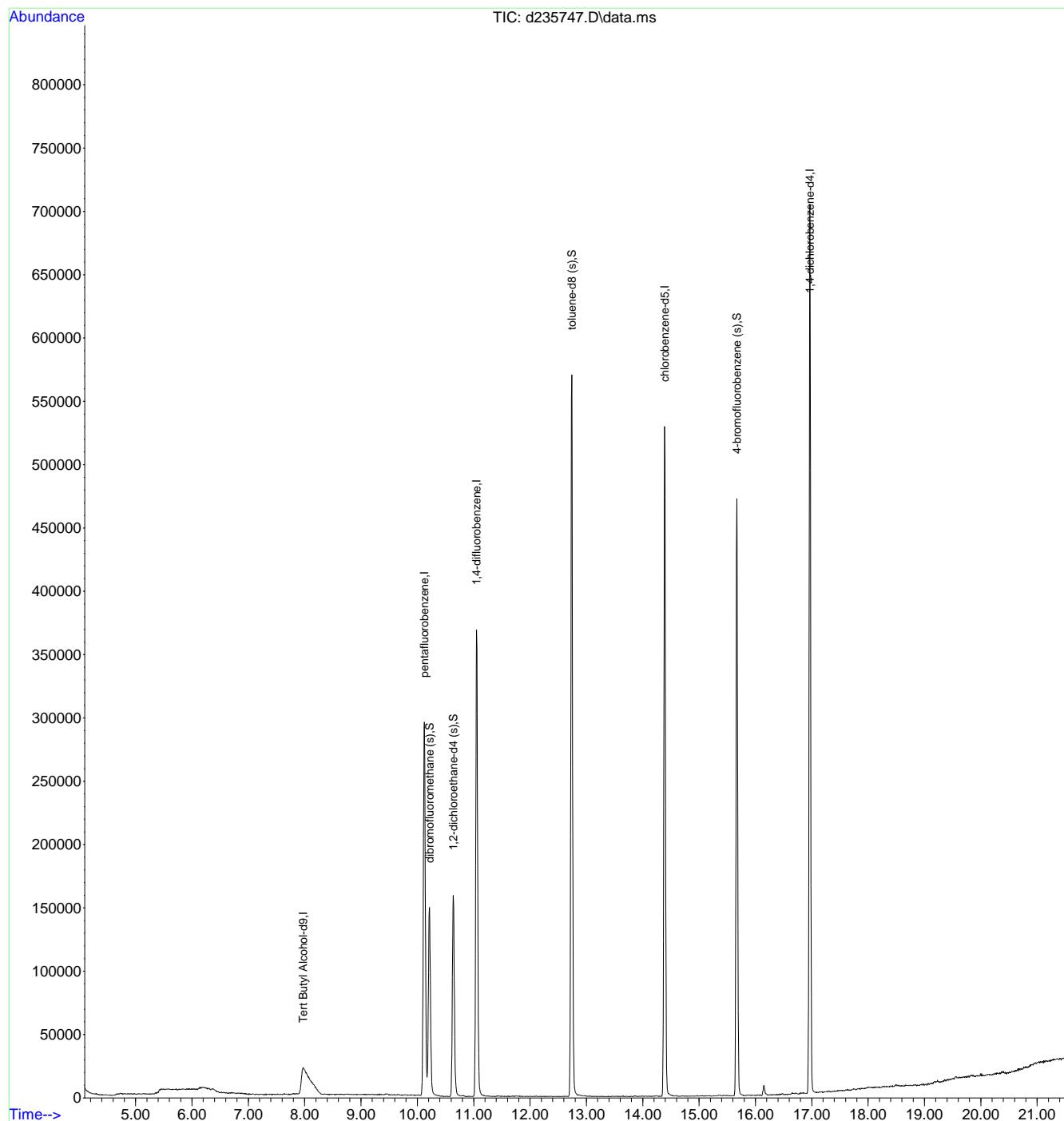
Target Compounds	Qvalue
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(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9624-9625\
 Data File : d235747.D
 Acq On : 12 Nov 2015 1:13 am
 Operator : BenM
 Sample : mb
 Misc : ms93980, vd9625, 10,,100,5,1
 ALS Vial : 29 Sample Multiplier: 1

Quant Time: Nov 12 07:46:18 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M
 Quant Title : SW-846 Method 8260C
 QLast Update : Thu Nov 05 07:40:57 2015
 Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
 Data File : V157412.D
 Acq On : 10 Nov 2015 11:34 am
 Operator : paypalr
 Sample : mb
 Misc : MS94183,VV6649,5.0,,,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 10 15:53:38 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MVS6633.M
 Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Thu Oct 29 11:45:05 2015
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.68	65	174133	500.00	ug/L	0.00
4) pentafluorobenzene	9.91	168	454207	50.00	ug/L	0.00
52) 1,4-difluorobenzene	10.86	114	527111	50.00	ug/L	0.00
82) chlorobenzene-d5	14.27	117	478354	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.87	152	275215	50.00	ug/L	0.00

System Monitoring Compounds

48) dibromofluoromethane (s)	10.00	113	173298	48.06	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	96.12%
49) 1,2-dichloroethane-d4 (s)	10.43	65	151347	42.46	ug/L	0.00
Spiked Amount	50.000	Range	68 - 124	Recovery	=	84.92%
74) toluene-d8 (s)	12.59	98	640611	50.19	ug/L	0.00
Spiked Amount	50.000	Range	77 - 125	Recovery	=	100.38%
97) 4-bromofluorobenzene (s)	15.57	95	235190	49.63	ug/L	0.00
Spiked Amount	50.000	Range	72 - 130	Recovery	=	99.26%

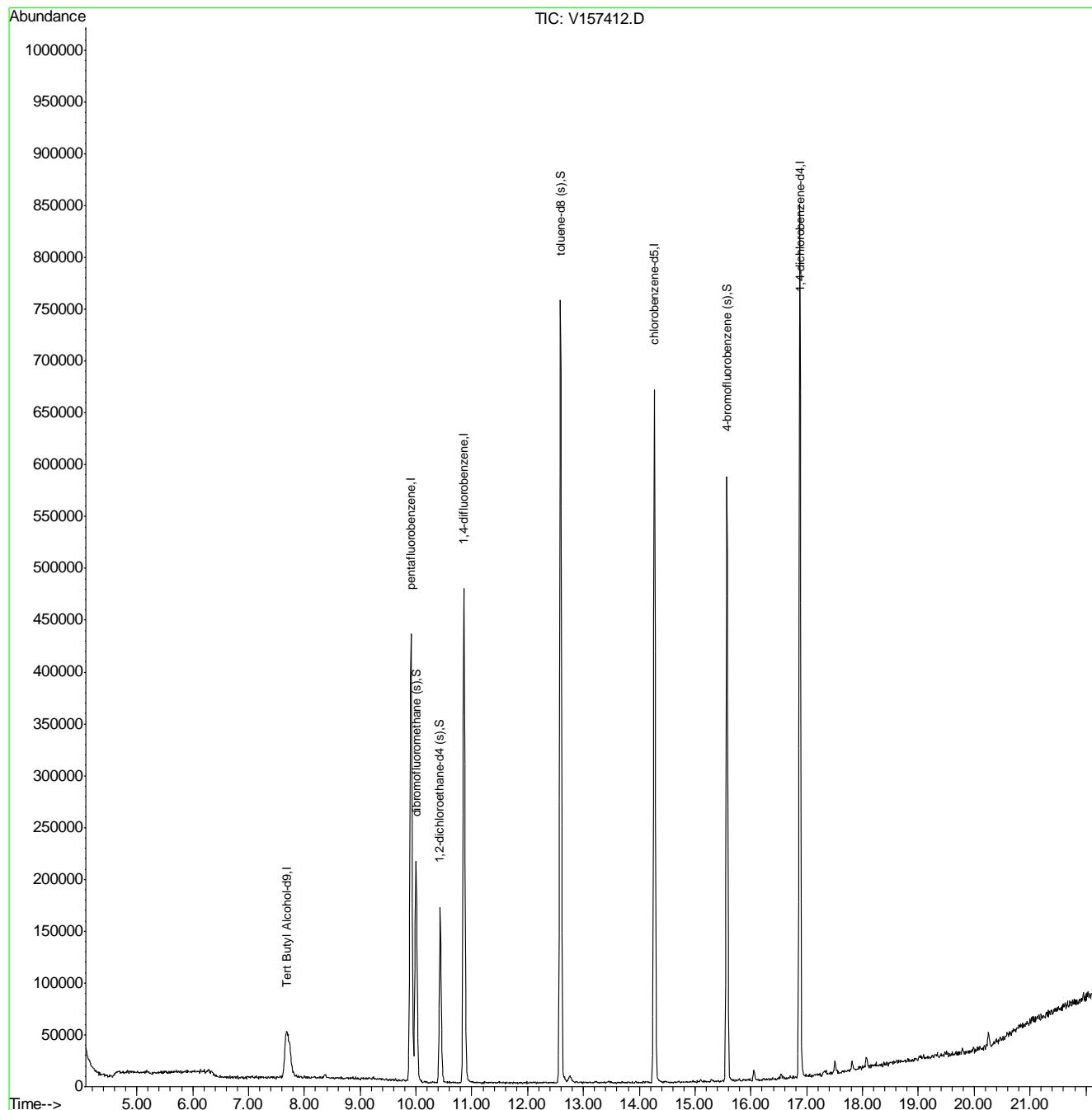
Target Compounds	Qvalue
(#) = qualifier out of range (m) = manual integration (+) = signals summed	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
 Data File : V157412.D
 Acq On : 10 Nov 2015 11:34 am
 Operator : payalr
 Sample : mb
 Misc : MS94183,VV6649,5.0,,,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 10 15:53:38 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MVS6633.M
 Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Thu Oct 29 11:45:05 2015
 Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
 Data File : x159515.D
 Acq On : 7 Nov 2015 11:52 am
 Operator : paypalr
 Sample : mb
 Misc : MS93977,VX6848,5.0,,,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 09 15:42:33 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MX6845.M
 Quant Title : Method 8260B/8260C, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri Nov 06 10:32:41 2015
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) tert butyl alcohol-d9	7.45	65	77263	500.00	ug/L	-0.02
4) pentafluorobenzene	10.18	168	187985	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.35	114	224608	50.00	ug/L	0.00
83) chlorobenzene-d5	15.57	117	197367	50.00	ug/L	0.01
98) 1,4-dichlorobenzene-d4	18.32	152	107784	50.00	ug/L	0.00

System Monitoring Compounds

45) dibromofluoromethane (s)	10.24	113	68572	50.87	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	101.74%
46) 1,2-dichloroethane-d4 (s)	10.78	65	63954	53.27	ug/L	0.00
Spiked Amount	50.000	Range	68 - 124	Recovery	=	106.54%
75) toluene-d8 (s)	13.53	98	279649	50.62	ug/L	0.00
Spiked Amount	50.000	Range	77 - 125	Recovery	=	101.24%
102) 4-bromofluorobenzene (s)	17.05	95	99637	50.95	ug/L	0.00
Spiked Amount	50.000	Range	72 - 130	Recovery	=	101.90%

Target Compounds

(#) = qualifier out of range (m) = manual integration (+) = signals summed

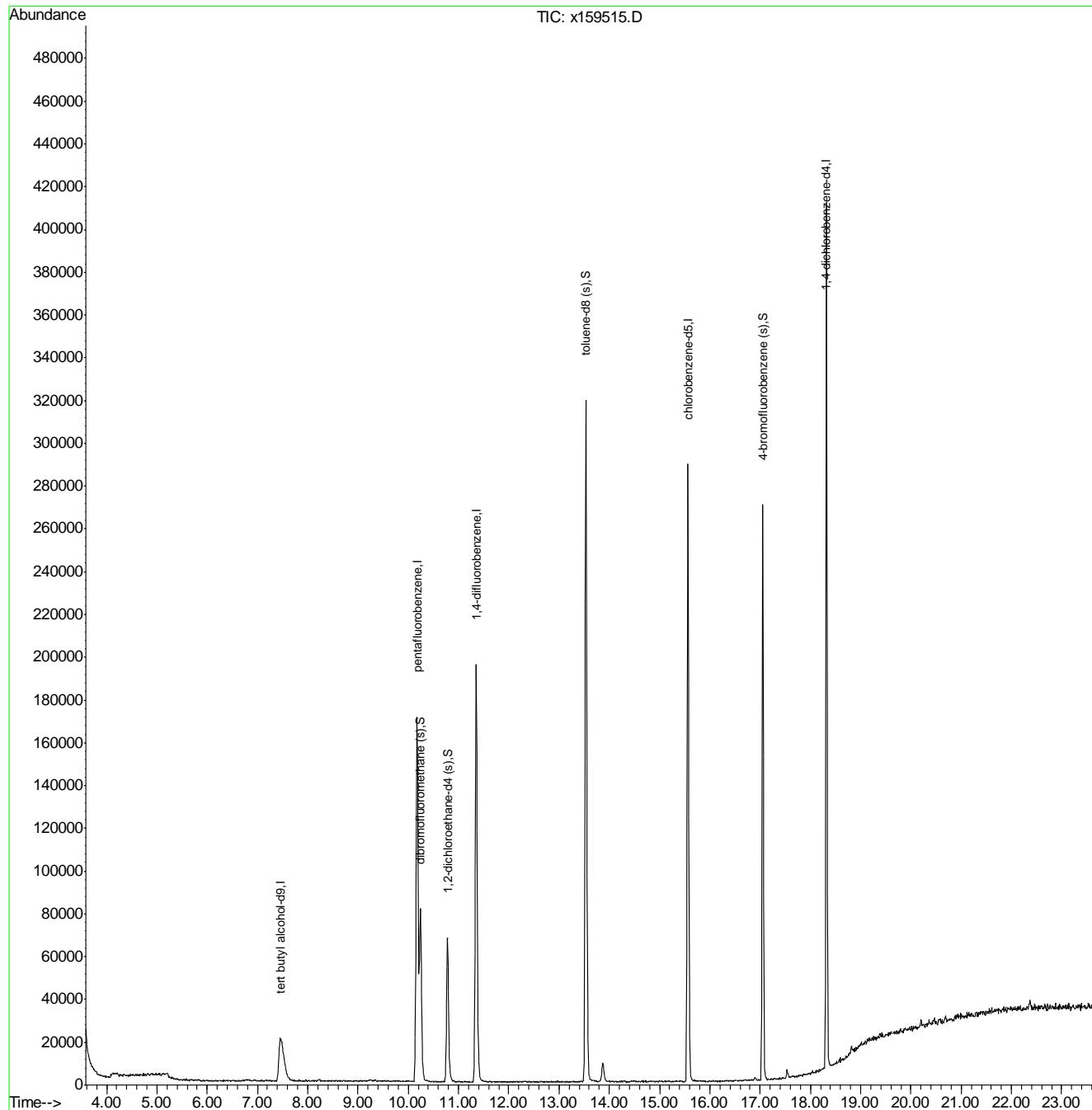
7.2.3

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Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
 Data File : x159515.D
 Acq On : 7 Nov 2015 11:52 am
 Operator : paypalr
 Sample : mb
 Misc : MS93977,VX6848,5.0,,,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 09 15:42:33 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MX6845.M
 Quant Title : Method 8260B/8260C, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri Nov 06 10:32:41 2015
 Response via : Initial Calibration





GC/MS Semi-volatiles

QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MB1	Z106071.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	150	ug/kg	
95-48-7	2-Methylphenol	ND	67	48	ug/kg	
	3&4-Methylphenol	ND	67	32	ug/kg	
100-02-7	4-Nitrophenol	ND	330	57	ug/kg	
108-95-2	Phenol	ND	67	25	ug/kg	
83-32-9	Acenaphthene	ND	33	31	ug/kg	
120-12-7	Anthracene	ND	33	2.9	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	6.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	7.1	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	6.9	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	7.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	67	6.2	ug/kg	
218-01-9	Chrysene	ND	33	5.4	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	12	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	3.9	ug/kg	
84-66-2	Diethyl phthalate	ND	67	4.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	12	ug/kg	
206-44-0	Fluoranthene	ND	33	4.1	ug/kg	
86-73-7	Fluorene	ND	33	4.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	17	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	6.2	ug/kg	
91-20-3	Naphthalene	ND	33	5.3	ug/kg	
85-01-8	Phenanthrene	ND	33	3.7	ug/kg	
129-00-0	Pyrene	ND	33	4.2	ug/kg	
110-86-1	Pyridine	ND	67	17	ug/kg	
91-22-5	Quinoline	ND	170	12	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	73% 30-106%
4165-62-2	Phenol-d5	69% 30-106%
118-79-6	2,4,6-Tribromophenol	96% 24-140%
4165-60-0	Nitrobenzene-d5	87% 26-122%

Method Blank Summary

Page 2 of 2

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MB1	Z106071.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No. Surrogate Recoveries Limits

321-60-8	2-Fluorobiphenyl	90%	36-112%
1718-51-0	Terphenyl-d14	87%	36-132%

CAS No. Tentatively Identified Compounds R.T. Est. Conc. Units Q

system artifact	2.20	150	ug/kg	J
system artifact/aldol-condensation	3.42	850	ug/kg	J
Total TIC, Semi-Volatile		0	ug/kg	

8.1.1
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Method Blank Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MB1	5P23284.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	150	ug/kg	
95-48-7	2-Methylphenol	ND	67	48	ug/kg	
	3&4-Methylphenol	ND	67	32	ug/kg	
100-02-7	4-Nitrophenol	ND	330	57	ug/kg	
108-95-2	Phenol	ND	67	25	ug/kg	
83-32-9	Acenaphthene	ND	33	31	ug/kg	
120-12-7	Anthracene	ND	33	2.9	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	6.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	7.1	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	6.9	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	7.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	67	6.2	ug/kg	
218-01-9	Chrysene	ND	33	5.4	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	12	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	3.9	ug/kg	
84-66-2	Diethyl phthalate	ND	67	4.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	12	ug/kg	
206-44-0	Fluoranthene	ND	33	4.1	ug/kg	
86-73-7	Fluorene	ND	33	4.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	17	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	6.2	ug/kg	
91-20-3	Naphthalene	ND	33	5.3	ug/kg	
85-01-8	Phenanthrene	ND	33	3.7	ug/kg	
129-00-0	Pyrene	ND	33	4.2	ug/kg	
110-86-1	Pyridine	ND	67	17	ug/kg	
91-22-5	Quinoline	ND	170	12	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	82% 30-106%
4165-62-2	Phenol-d5	83% 30-106%
118-79-6	2,4,6-Tribromophenol	71% 24-140%
4165-60-0	Nitrobenzene-d5	94% 26-122%

Method Blank Summary

Page 2 of 2

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MB1	5P23284.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Surrogate Recoveries	Limits
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321-60-8	2-Fluorobiphenyl	93%	36-112%
1718-51-0	Terphenyl-d14	94%	36-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
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system artifact	2.18	180	ug/kg	J
system artifact/aldol-condensation	3.44	940	ug/kg	J
system artifact	7.33	380	ug/kg	J
system artifact	8.45	310	ug/kg	J
system artifact	9.44	200	ug/kg	J
system artifact	10.31	160	ug/kg	J
system artifact	14.06	140	ug/kg	J
system artifact	14.72	140	ug/kg	J
system artifact	15.34	140	ug/kg	J
system artifact	15.93	140	ug/kg	J
Total TIC, Semi-Volatile		0	ug/kg	

Blank Spike Summary

Page 1 of 2

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-BS1	Z106072.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
105-67-9	2,4-Dimethylphenol	1670	1310	79	49-115
51-28-5	2,4-Dinitrophenol	3330	2050	62	30-127
95-48-7	2-Methylphenol	1670	1170	70	53-103
	3&4-Methylphenol	1670	1120	67	53-102
100-02-7	4-Nitrophenol	1670	1600	96	36-143
108-95-2	Phenol	1670	983	59	45-106
83-32-9	Acenaphthene	1670	1250	75	60-108
120-12-7	Anthracene	1670	1270	76	59-109
56-55-3	Benzo(a)anthracene	1670	1240	74	52-113
50-32-8	Benzo(a)pyrene	1670	1350	81	56-122
205-99-2	Benzo(b)fluoranthene	1670	1380	83	53-119
191-24-2	Benzo(g,h,i)perylene	1670	1110	67	48-117
207-08-9	Benzo(k)fluoranthene	1670	1270	76	52-115
92-52-4	1,1'-Biphenyl	1670	1210	73	54-101
218-01-9	Chrysene	1670	1240	74	51-119
53-70-3	Dibenzo(a,h)anthracene	1670	1260	76	49-118
84-74-2	Di-n-butyl phthalate	1670	1420	85	56-117
84-66-2	Diethyl phthalate	1670	1310	79	54-112
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1440	86	45-130
206-44-0	Fluoranthene	1670	1280	77	58-110
86-73-7	Fluorene	1670	1260	76	59-108
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1230	74	48-120
91-57-6	2-Methylnaphthalene	1670	1240	74	48-104
91-20-3	Naphthalene	1670	1200	72	49-100
85-01-8	Phenanthrene	1670	1270	76	57-105
129-00-0	Pyrene	1670	1210	73	50-117
110-86-1	Pyridine	1670	675	41	26-110
91-22-5	Quinoline	1670	1230	74	51-102

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	67%	30-106%
4165-62-2	Phenol-d5	66%	30-106%
118-79-6	2,4,6-Tribromophenol	91%	24-140%
4165-60-0	Nitrobenzene-d5	74%	26-122%

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 2

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-BS1	Z106072.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	79%	36-112%
1718-51-0	Terphenyl-d14	77%	36-132%

8.2.1
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* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-BS1	5P23283.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
105-67-9	2,4-Dimethylphenol	1670	1470	88	49-115
51-28-5	2,4-Dinitrophenol	3330	2600	78	30-127
95-48-7	2-Methylphenol	1670	1240	74	53-103
	3&4-Methylphenol	1670	1230	74	53-102
100-02-7	4-Nitrophenol	1670	1410	85	36-143
108-95-2	Phenol	1670	1170	70	45-106
83-32-9	Acenaphthene	1670	1260	76	60-108
120-12-7	Anthracene	1670	1200	72	59-109
56-55-3	Benzo(a)anthracene	1670	1200	72	52-113
50-32-8	Benzo(a)pyrene	1670	1300	78	56-122
205-99-2	Benzo(b)fluoranthene	1670	1330	80	53-119
191-24-2	Benzo(g,h,i)perylene	1670	1160	70	48-117
207-08-9	Benzo(k)fluoranthene	1670	1250	75	52-115
92-52-4	1,1'-Biphenyl	1670	1310	79	54-101
218-01-9	Chrysene	1670	1180	71	51-119
53-70-3	Dibenzo(a,h)anthracene	1670	1260	76	49-118
84-74-2	Di-n-butyl phthalate	1670	1310	79	56-117
84-66-2	Diethyl phthalate	1670	1290	77	54-112
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1530	92	45-130
206-44-0	Fluoranthene	1670	1170	70	58-110
86-73-7	Fluorene	1670	1220	73	59-108
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1300	78	48-120
91-57-6	2-Methylnaphthalene	1670	1290	77	48-104
91-20-3	Naphthalene	1670	1130	68	49-100
85-01-8	Phenanthrene	1670	1140	68	57-105
129-00-0	Pyrene	1670	1320	79	50-117
110-86-1	Pyridine	1670	968	58	26-110
91-22-5	Quinoline	1670	1240	74	51-102

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	78%	30-106%
4165-62-2	Phenol-d5	76%	30-106%
118-79-6	2,4,6-Tribromophenol	71%	24-140%
4165-60-0	Nitrobenzene-d5	84%	26-122%

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 2

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-BS1	5P23283.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	84%	36-112%
1718-51-0	Terphenyl-d14	86%	36-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MS	5P23291.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
OP88822-MSD	5P23292.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
JC7769-1	5P23296.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
JC7769-1	5P23272.D	5	11/16/15	AP	11/10/15	OP88822	E5P1184

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Compound	JC7769-1		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
105-67-9	2,4-Dimethylphenol	ND		2010	1720	86	1940	1550	80	10	23-133/34
51-28-5	2,4-Dinitrophenol	ND		4010	864	22	3870	394	10	75* ^a	10-110/51
95-48-7	2-Methylphenol	ND		2010	1410	70	1940	1290	67	9	32-111/34
	3&4-Methylphenol	ND		2010	1410	70	1940	1260	65	11	32-113/34
100-02-7	4-Nitrophenol	ND		2010	1650	82	1940	1390	72	17	14-154/39
108-95-2	Phenol	57.2	J	2010	1290	61	1940	1190	59	8	25-112/33
83-32-9	Acenaphthene	3280		2010	3230	0* ^b	1940	3540	13* ^b	9	34-125/36
120-12-7	Anthracene	1040		2010	2030	49	1940	1890	44	7	31-131/41
56-55-3	Benz(a)anthracene	1210		2010	2110	45	1940	2090	45	1	23-136/43
50-32-8	Benzo(a)pyrene	853		2010	1920	53	1940	1890	54	2	22-144/42
205-99-2	Benzo(b)fluoranthene	1290		2010	2200	45	1940	2100	42	5	18-145/43
191-24-2	Benzo(g,h,i)perylene	343		2010	1480	57	1940	1340	51	10	20-138/43
207-08-9	Benzo(k)fluoranthene	321		2010	1570	62	1940	1510	61	4	27-129/43
92-52-4	1,1'-Biphenyl	480		2010	1740	63	1940	1580	57	10	33-116/32
218-01-9	Chrysene	946		2010	1890	47	1940	1890	49	0	21-142/43
53-70-3	Dibenzo(a,h)anthracene	98.5		2010	1480	69	1940	1290	62	14	25-135/41
84-74-2	Di-n-butyl phthalate	ND		2010	1490	74	1940	1280	66	15	32-131/34
84-66-2	Diethyl phthalate	ND		2010	1460	73	1940	1260	65	15	35-124/32
117-81-7	bis(2-Ethylhexyl)phthalate	ND		2010	1740	87	1940	1460	75	18	25-146/35
206-44-0	Fluoranthene	6890 ^d		2010	4630	0* ^c	1940	4880	0* ^c	5	15-143/46
86-73-7	Fluorene	2720		2010	2940	11* ^b	1940	3080	19* ^b	5	30-129/37
193-39-5	Indeno(1,2,3-cd)pyrene	418		2010	1690	63	1940	1570	59	7	23-141/44
91-57-6	2-Methylnaphthalene	2370		2010	2530	8* ^b	1940	2790	22	10	21-125/33
91-20-3	Naphthalene	2920		2010	2790	0* ^b	1940	3210	15* ^b	14	24-118/35
85-01-8	Phenanthrene	9420 ^d		2010	5900	0* ^c	1940	5770	0* ^c	2	14-144/44
129-00-0	Pyrene	5340 ^d		2010	4220	4* ^c	1940	4260	7* ^c	1	16-147/46
110-86-1	Pyridine	ND		2010	909	45	1940	988	51	8	10-110/43
91-22-5	Quinoline	ND		2010	1380	69	1940	1260	65	9	26-116/32

CAS No.	Surrogate Recoveries	MS	MSD	JC7769-1	JC7769-1	Limits
367-12-4	2-Fluorophenol	68%	69%	69%	87%	30-106%
4165-62-2	Phenol-d5	70%	68%	68%	90%	30-106%
118-79-6	2,4,6-Tribromophenol	67%	62%	62%	69%	24-140%
4165-60-0	Nitrobenzene-d5	74%	74%	77%	94%	26-122%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MS	5P23291.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
OP88822-MSD	5P23292.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
JC7769-1	5P23296.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
JC7769-1	5P23272.D	5	11/16/15	AP	11/10/15	OP88822	E5P1184

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7897-1, JC7897-2, JC7897-3

CAS No.	Surrogate Recoveries	MS	MSD	JC7769-1	JC7769-1	Limits
321-60-8	2-Fluorobiphenyl	79%	72%	75%	91%	36-112%
1718-51-0	Terphenyl-d14	80%	70%	71%	86%	36-132%

- (a) Analytical precision exceeds in-house control limits.
- (b) Outside control limits due to matrix interference.
- (c) Outside control limits due to high level in sample relative to spike amount.
- (d) Result is from Run #2.

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E5P1165-DFTPP	Injection Date:	11/04/15
Lab File ID:	5P22775.D	Injection Time:	09:56
Instrument ID:	GCMS5P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	32250	34.9	Pass
68	Less than 2.0% of mass 69	2	0.00	(0.00) ^a Pass
69	Mass 69 relative abundance	41805	45.2	Pass
70	Less than 2.0% of mass 69	49	0.05	(0.12) ^a Pass
127	40.0 - 60.0% of mass 198	50813	54.9	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	92512	100.0	Pass
199	5.0 - 9.0% of mass 198	6411	6.93	Pass
275	10.0 - 30.0% of mass 198	22352	24.2	Pass
365	1.0 - 100.0% of mass 198	2324	2.51	Pass
441	Present, but less than mass 443	11877	12.8	(76.6) ^b Pass
442	40.0 - 100.0% of mass 198	81306	87.9	Pass
443	17.0 - 23.0% of mass 442	15500	16.8	(19.1) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P1165-IC1165	5P22776.D	11/04/15	10:10	00:14	Initial cal 2
E5P1165-IC1165	5P22778.D	11/04/15	11:04	01:08	Initial cal 1
E5P1165-IC1165	5P22779.D	11/04/15	11:30	01:34	Initial cal 5
E5P1165-IC1165	5P22780.D	11/04/15	11:57	02:01	Initial cal 10
E5P1165-IC1165	5P22781.D	11/04/15	12:24	02:28	Initial cal 80
E5P1165-IC1165	5P22782.D	11/04/15	12:51	02:55	Initial cal 25
E5P1165-ICC1165	5P22783.D	11/04/15	13:19	03:23	Initial cal 50
E5P1165-IC1165	5P22784.D	11/04/15	13:45	03:49	Initial cal 100

Instrument Performance Check (DFTPP)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E5P1166-DFTPP	Injection Date:	11/04/15
Lab File ID:	5P22786.D	Injection Time:	14:39
Instrument ID:	GCMS5P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	39616	35.4	Pass
68	Less than 2.0% of mass 69	449	0.40	(0.96) ^a Pass
69	Mass 69 relative abundance	46568	41.6	Pass
70	Less than 2.0% of mass 69	275	0.25	(0.59) ^a Pass
127	40.0 - 60.0% of mass 198	59346	53.0	Pass
197	Less than 1.0% of mass 198	403	0.36	Pass
198	Base peak, 100% relative abundance	111941	100.0	Pass
199	5.0 - 9.0% of mass 198	7526	6.72	Pass
275	10.0 - 30.0% of mass 198	26808	23.9	Pass
365	1.0 - 100.0% of mass 198	3219	2.88	Pass
441	Present, but less than mass 443	15283	13.7	(75.4) ^b Pass
442	40.0 - 100.0% of mass 198	106328	95.0	Pass
443	17.0 - 23.0% of mass 442	20271	18.1	(19.1) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P1166-IC1166	5P22787.D	11/04/15	14:54	00:15	Initial cal 1
E5P1166-IC1166	5P22788.D	11/04/15	15:21	00:42	Initial cal 2
E5P1166-IC1166	5P22789.D	11/04/15	15:48	01:09	Initial cal 5
E5P1166-IC1166	5P22790.D	11/04/15	16:15	01:36	Initial cal 10
E5P1166-IC1166	5P22791.D	11/04/15	16:42	02:03	Initial cal 25
E5P1166-ICC1166	5P22792.D	11/04/15	17:09	02:30	Initial cal 50
E5P1166-IC1166	5P22793.D	11/04/15	17:36	02:57	Initial cal 80
E5P1166-IC1166	5P22794.D	11/04/15	18:03	03:24	Initial cal 100
E5P1166-ICV1165	5P22795.D	11/04/15	18:30	03:51	Initial cal verification 50
E5P1166-ICV1165	5P22796.D	11/04/15	18:57	04:18	Initial cal verification 50
E5P1166-ICV1166	5P22797A.D	11/04/15	19:24	04:45	Initial cal verification 50
E5P1166-ICV1165	5P22797.D	11/04/15	19:24	04:45	Initial cal verification 50
E5P1166-ICV1165	5P22798.D	11/04/15	19:51	05:12	Initial cal verification 50
E5P1166-ICV1166	5P22798A.D	11/04/15	19:51	05:12	Initial cal verification 50
E5P1166-ICV1166	5P22800.D	11/04/15	20:46	06:07	Initial cal verification 50
E5P1166-ICV1165	5P22802.D	11/04/15	21:40	07:01	Initial cal verification 50

Instrument Performance Check (DFTPP)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E5P1185-DFTPP	Injection Date:	11/16/15
Lab File ID:	5P23279.D	Injection Time:	13:41
Instrument ID:	GCMS5P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	55946	31.4	Pass
68	Less than 2.0% of mass 69	660	0.37	(0.97) ^a Pass
69	Mass 69 relative abundance	67821	38.1	Pass
70	Less than 2.0% of mass 69	213	0.12	(0.31) ^a Pass
127	40.0 - 60.0% of mass 198	88725	49.8	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	178112	100.0	Pass
199	5.0 - 9.0% of mass 198	11614	6.52	Pass
275	10.0 - 30.0% of mass 198	40400	22.7	Pass
365	1.0 - 100.0% of mass 198	5013	2.81	Pass
441	Present, but less than mass 443	22829	12.8	(79.3) ^b Pass
442	40.0 - 100.0% of mass 198	151029	84.8	Pass
443	17.0 - 23.0% of mass 442	28786	16.2	(19.1) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P1185-CC1165	5P23280.D	11/16/15	13:54	00:13	Continuing cal 50
E5P1185-CC1166	5P23281.D	11/16/15	14:28	00:47	Continuing cal 50
OP88822-BS1	5P23283.D	11/16/15	15:21	01:40	Blank Spike
OP88822-MB1	5P23284.D	11/16/15	15:48	02:07	Method Blank
JC8061-1	5P23285.D	11/16/15	16:15	02:34	(used for QC only; not part of job JC7897)
ZZZZZZ	5P23286.D	11/16/15	16:42	03:01	(unrelated sample)
ZZZZZZ	5P23287.D	11/16/15	17:10	03:29	(unrelated sample)
ZZZZZZ	5P23288.D	11/16/15	17:37	03:56	(unrelated sample)
ZZZZZZ	5P23289.D	11/16/15	18:03	04:22	(unrelated sample)
ZZZZZZ	5P23290.D	11/16/15	18:30	04:49	(unrelated sample)
OP88822-MS	5P23291.D	11/16/15	18:56	05:15	Matrix Spike
OP88822-MSD	5P23292.D	11/16/15	19:23	05:42	Matrix Spike Duplicate
ZZZZZZ	5P23293.D	11/16/15	19:50	06:09	(unrelated sample)
ZZZZZZ	5P23294.D	11/16/15	20:17	06:36	(unrelated sample)
ZZZZZZ	5P23295.D	11/16/15	20:43	07:02	(unrelated sample)
JC7769-1	5P23296.D	11/16/15	21:10	07:29	(used for QC only; not part of job JC7897)
ZZZZZZ	5P23297.D	11/16/15	21:36	07:55	(unrelated sample)

Instrument Performance Check (DFTPP)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E5P1190-DFTPP	Injection Date:	11/18/15
Lab File ID:	5P23372.D	Injection Time:	20:26
Instrument ID:	GCMS5P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	49543	32.0	Pass
68	Less than 2.0% of mass 69	445	0.29	(0.81) ^a Pass
69	Mass 69 relative abundance	54747	35.4	Pass
70	Less than 2.0% of mass 69	306	0.20	(0.56) ^a Pass
127	40.0 - 60.0% of mass 198	74359	48.1	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	154642	100.0	Pass
199	5.0 - 9.0% of mass 198	10074	6.51	Pass
275	10.0 - 30.0% of mass 198	37711	24.4	Pass
365	1.0 - 100.0% of mass 198	4786	3.09	Pass
441	Present, but less than mass 443	18982	12.3	(73.1) ^b Pass
442	40.0 - 100.0% of mass 198	129394	83.7	Pass
443	17.0 - 23.0% of mass 442	25975	16.8	(20.1) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P1190-CC1165	5P23373.D	11/18/15	20:39	00:13	Continuing cal 25
E5P1190-CC1166	5P23374.D	11/18/15	21:06	00:40	Continuing cal 25
OP89068-MB1	5P23376.D	11/18/15	22:00	01:34	Method Blank
OP89068-BS1	5P23377.D	11/18/15	22:26	02:00	Blank Spike
OP89068-BSD	5P23378.D	11/18/15	22:53	02:27	Blank Spike Duplicate
ZZZZZZ	5P23382.D	11/19/15	00:41	04:15	(unrelated sample)
ZZZZZZ	5P23383.D	11/19/15	01:08	04:42	(unrelated sample)
ZZZZZZ	5P23386.D	11/19/15	02:28	06:02	(unrelated sample)
ZZZZZZ	5P23387.D	11/19/15	02:55	06:29	(unrelated sample)
JC7897-2	5P23388.D	11/19/15	03:22	06:56	MH523-12-5.0-20151105
JC7897-3	5P23389.D	11/19/15	03:48	07:22	MH523-13-5.0-20151105
JC7897-1	5P23390.D	11/19/15	04:15	07:49	MH523-11-5.0-20151105
ZZZZZZ	5P23391.D	11/19/15	04:42	08:16	(unrelated sample)
ZZZZZZ	5P23392.D	11/19/15	05:08	08:42	(unrelated sample)

Instrument Performance Check (DFTPP)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	EZ5255-DFTPP	Injection Date:	10/16/15
Lab File ID:	Z105278.D	Injection Time:	11:36
Instrument ID:	GCMSZ		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	30390	58.4	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) ^a Pass
69	Mass 69 relative abundance	21889	42.1	Pass
70	Less than 2.0% of mass 69	185	0.36	(0.85) ^a Pass
127	40.0 - 60.0% of mass 198	22757	43.7	Pass
197	Less than 1.0% of mass 198	328	0.63	Pass
198	Base peak, 100% relative abundance	52053	100.0	Pass
199	5.0 - 9.0% of mass 198	3240	6.22	Pass
275	10.0 - 30.0% of mass 198	11251	21.6	Pass
365	1.0 - 100.0% of mass 198	1685	3.24	Pass
441	Present, but less than mass 443	4333	8.32	(85.0) ^b Pass
442	40.0 - 100.0% of mass 198	27194	52.2	Pass
443	17.0 - 23.0% of mass 442	5096	9.79	(18.7) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ5255-IC5255	Z105281.D	10/16/15	13:37	02:01	Initial cal 100
EZ5255-IC5255	Z105282.D	10/16/15	14:07	02:31	Initial cal 80
EZ5255-ICC5255	Z105283.D	10/16/15	14:38	03:02	Initial cal 50
EZ5255-IC5255	Z105284.D	10/16/15	15:09	03:33	Initial cal 25
EZ5255-IC5255	Z105285.D	10/16/15	15:39	04:03	Initial cal 10
EZ5255-IC5255	Z105286.D	10/16/15	16:10	04:34	Initial cal 5
EZ5255-IC5255	Z105287.D	10/16/15	16:41	05:05	Initial cal 2
EZ5255-IC5255	Z105288.D	10/16/15	17:12	05:36	Initial cal 1
EZ5255-ICV5255	Z105289.D	10/16/15	17:42	06:06	Initial cal verification 50
EZ5255-ICV5255	Z105290.D	10/16/15	18:13	06:37	Initial cal verification 50
EZ5255-ICV5255	Z105291.D	10/16/15	18:44	07:08	Initial cal verification 50
EZ5255-ICV5255	Z105292.D	10/16/15	19:14	07:38	Initial cal verification 50

Instrument Performance Check (DFTPP)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	EZ5278-DFTPP	Injection Date:	11/03/15
Lab File ID:	Z105710.D	Injection Time:	00:17
Instrument ID:	GCMSZ		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	44173	32.0	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) ^a Pass
69	Mass 69 relative abundance	66783	48.3	Pass
70	Less than 2.0% of mass 69	61	0.04	(0.09) ^a Pass
127	40.0 - 60.0% of mass 198	65782	47.6	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	138181	100.0	Pass
199	5.0 - 9.0% of mass 198	8766	6.34	Pass
275	10.0 - 30.0% of mass 198	39424	28.5	Pass
365	1.0 - 100.0% of mass 198	5635	4.08	Pass
441	Present, but less than mass 443	17172	12.4	(84.7) ^b Pass
442	40.0 - 100.0% of mass 198	106109	76.8	Pass
443	17.0 - 23.0% of mass 442	20268	14.7	(19.1) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ5278-IC5278	Z105711.D	11/03/15	00:37	00:20	Initial cal 1
EZ5278-IC5278	Z105712.D	11/03/15	01:09	00:52	Initial cal 100
EZ5278-IC5278	Z105713.D	11/03/15	01:40	01:23	Initial cal 80
EZ5278-ICC5278	Z105714.D	11/03/15	02:11	01:54	Initial cal 50
EZ5278-IC5278	Z105715.D	11/03/15	02:42	02:25	Initial cal 25
EZ5278-IC5278	Z105716.D	11/03/15	03:13	02:56	Initial cal 10
EZ5278-IC5278	Z105717.D	11/03/15	03:45	03:28	Initial cal 5
EZ5278-IC5278	Z105718.D	11/03/15	04:16	03:59	Initial cal 2
EZ5278-ICV5278	Z105719.D	11/03/15	04:47	04:30	Initial cal verification 50
EZ5278-ICV5278	Z105720.D	11/03/15	07:54	07:37	Initial cal verification 50
EZ5278-ICV5278	Z105721.D	11/03/15	08:25	08:08	Initial cal verification 50
EZ5278-ICV5278	Z105722.D	11/03/15	08:56	08:39	Initial cal verification 50
EZ5278-ICV5278	Z105723.D	11/03/15	09:27	09:10	Initial cal verification 50
EZ5278-ICV5278	Z105724.D	11/03/15	10:00	09:43	Initial cal verification 50

Instrument Performance Check (DFTPP)

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Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	EZ5295-DFTPP	Injection Date:	11/13/15
Lab File ID:	Z106062.D	Injection Time:	11:42
Instrument ID:	GCMSZ		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	41493	45.7	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) ^a Pass
69	Mass 69 relative abundance	44607	49.2	Pass
70	Less than 2.0% of mass 69	382	0.42	(0.86) ^a Pass
127	40.0 - 60.0% of mass 198	46176	50.9	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	90754	100.0	Pass
199	5.0 - 9.0% of mass 198	6700	7.38	Pass
275	10.0 - 30.0% of mass 198	26303	29.0	Pass
365	1.0 - 100.0% of mass 198	4030	4.44	Pass
441	Present, but less than mass 443	12053	13.3	(80.9) ^b Pass
442	40.0 - 100.0% of mass 198	77266	85.1	Pass
443	17.0 - 23.0% of mass 442	14893	16.4	(19.3) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ5295-CC5278	Z106063.D	11/13/15	11:58	00:16	Continuing cal 50
EZ5295-CC5255	Z106064.D	11/13/15	12:45	01:03	Continuing cal 50
OP88855-MB1	Z106067.D	11/13/15	14:22	02:40	Method Blank
ZZZZZZ	Z106068.D	11/13/15	14:53	03:11	(unrelated sample)
ZZZZZZ	Z106069.D	11/13/15	15:25	03:43	(unrelated sample)
ZZZZZZ	Z106070.D	11/13/15	15:56	04:14	(unrelated sample)
OP88822-MB1	Z106071.D	11/13/15	16:27	04:45	Method Blank
OP88822-BS1	Z106072.D	11/13/15	16:59	05:17	Blank Spike
ZZZZZZ	Z106074.D	11/13/15	18:03	06:21	(unrelated sample)
ZZZZZZ	Z106075.D	11/13/15	18:34	06:52	(unrelated sample)
ZZZZZZ	Z106076.D	11/13/15	19:06	07:24	(unrelated sample)
ZZZZZZ	Z106077.D	11/13/15	19:37	07:55	(unrelated sample)
ZZZZZZ	Z106079.D	11/13/15	20:40	08:58	(unrelated sample)
ZZZZZZ	Z106080.D	11/13/15	21:12	09:30	(unrelated sample)
ZZZZZZ	Z106081.D	11/13/15	21:43	10:01	(unrelated sample)
ZZZZZZ	Z106082.D	11/13/15	22:14	10:32	(unrelated sample)
JC7897-2	Z106084.D	11/13/15	23:17	11:35	MH523-12-5.0-20151105

Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	E5P1185-CC1165				Injection Date:		11/16/15					
Lab File ID:	5P23280.D				Injection Time:		13:54					
Instrument ID:	GCMS5P				Method:		SW846 8270D					

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	208164	5.14	788829	6.61	463353	8.72	743982	10.55	687522	14.33	665273	16.40
Upper Limit ^a	416328	5.64	1577658	7.11	926706	9.22	1487964	11.05	1375044	14.83	1330546	16.90
Lower Limit ^b	104082	4.64	394415	6.11	231677	8.22	371991	10.05	343761	13.83	332637	15.90

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
OP88822-BS1	246003	5.14	924072	6.61	530378	8.72	845883	10.55	703581	14.33	676688	16.40
OP88822-MB1	283547	5.14	1054170	6.61	591197	8.72	914937	10.54	725516	14.32	659829	16.40
JC8061-1	266929	5.14	1009498	6.61	569303	8.72	887508	10.54	732895	14.32	716694	16.40
ZZZZZZ	260794	5.14	959710	6.61	528172	8.72	792642	10.54	628351	14.32	572741	16.40
ZZZZZZ	252616	5.14	951937	6.61	544187	8.72	879755	10.54	744004	14.32	720554	16.40
ZZZZZZ	257509	5.14	955923	6.61	532519	8.72	819844	10.54	647193	14.32	591040	16.40
ZZZZZZ	236068	5.14	883235	6.61	496100	8.72	773047	10.54	628598	14.32	584748	16.39
ZZZZZZ	223325	5.14	845423	6.61	472575	8.72	755021	10.54	619477	14.32	581232	16.40
OP88822-MS	236738	5.14	883173	6.61	494312	8.72	779285	10.55	657764	14.33	665619	16.40
OP88822-MSD	227277	5.14	843874	6.61	487868	8.72	774693	10.55	683334	14.33	700138	16.40
ZZZZZZ	220525	5.14	829779	6.61	465274	8.72	732037	10.54	621458	14.32	602078	16.40
ZZZZZZ	230517	5.14	859033	6.61	494006	8.72	780470	10.54	663641	14.32	639833	16.40
ZZZZZZ	206485	5.14	786042	6.61	457841	8.72	737674	10.54	637387	14.33	640288	16.40
JC7769-1	210028	5.14	786322	6.61	446726	8.72	720249	10.55	641160	14.33	649206	16.41
ZZZZZZ	241248	5.14	884652	6.61	497545	8.72	784799	10.55	684918	14.34	707862	16.41

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	E5P1190-CC1165				Injection Date:		11/18/15					
Lab File ID:	5P23373.D				Injection Time:		20:39					
Instrument ID:	GCMS5P				Method:		SW846 8270D					

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	207574	5.11	772218	6.58	463786	8.69	749796	10.51	711197	14.29	709488	16.36
Upper Limit ^a	415148	5.61	1544436	7.08	927572	9.19	1499592	11.01	1422394	14.79	1418976	16.86
Lower Limit ^b	103787	4.61	386109	6.08	231893	8.19	374898	10.01	355599	13.79	354744	15.86
Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
OP89068-MB1	167566	5.11	622812	6.57	359445	8.69	577610	10.50	508648	14.28	510158	16.35
OP89068-BS1	172760	5.11	652756	6.58	387489	8.69	642624	10.51	580799	14.29	579935	16.35
OP89068-BSD	163128	5.11	603265	6.58	348342	8.68	565783	10.50	509154	14.29	504296	16.35
ZZZZZZ	168452	5.11	622639	6.58	365520	8.68	596106	10.50	556723	14.28	553107	16.35
ZZZZZZ	171745	5.11	633732	6.57	372492	8.68	601324	10.50	541946	14.28	532650	16.35
ZZZZZZ	166053	5.11	621160	6.57	361785	8.68	592684	10.50	540953	14.28	538664	16.35
ZZZZZZ	164955	5.11	615479	6.57	360680	8.68	585236	10.50	525158	14.28	514269	16.35
JC7897-2 ^c	172235	5.11	648244	6.57	373109	8.68	592121	10.50	549549	14.28	542692	16.35
JC7897-3 ^d	167287	5.11	614479	6.58	389467	8.70	638783	10.52	596537	14.31	589666	16.38
JC7897-1 ^d	163108	5.11	604498	6.58	359508	8.69	573935	10.51	525475	14.29	533839	16.36
ZZZZZZ	161079	5.11	620557	6.58	370156	8.69	610842	10.52	601368	14.36	481924	16.51
ZZZZZZ	174398	5.12	666425	6.58	385341	8.70	639790	10.52	657084	14.32	703442	16.41

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

(c) Confirmation run.

(d) Dilution required due to matrix interference.

Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	EZ5295-CC5278				Injection Date:		11/13/15					
Lab File ID:	Z106063.D				Injection Time:		11:58					
Instrument ID:	GCMSZ				Method:		SW846 8270D					

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	94957	4.67	357811	5.59	239856	6.99	423256	8.84	526853	14.07	499304	17.10
Upper Limit ^a	189914	5.17	715622	6.09	479712	7.49	846512	9.34	1053706	14.57	998608	17.60
Lower Limit ^b	47479	4.17	178906	5.09	119928	6.49	211628	8.34	263427	13.57	249652	16.60
Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
OP88855-MB1	119695	4.67	454057	5.59	292897	6.99	513560	8.83	625125	14.05	642140	17.10
ZZZZZZ	125313	4.67	458694	5.59	303045	7.00	523270	8.89	387976	14.12	335518	17.14
ZZZZZZ	128843	4.67	513055	5.59	319318	6.99	545443	8.83	630453	14.06	538779	17.10
ZZZZZZ	102728	4.67	407960	5.59	263131	6.99	459153	8.83	538444	14.06	511435	17.10
OP88822-MB1	124590	4.67	465015	5.59	290866	6.99	512732	8.83	567261	14.05	551497	17.10
OP88822-BS1	120231	4.67	459374	5.59	284094	6.99	500638	8.83	575132	14.06	541610	17.10
ZZZZZZ	158704	4.68	598181	5.60	345921	7.01	515884	8.89	529477	14.17	557589	17.24
ZZZZZZ	118253	4.68	419793	5.60	235246	7.01	352969	8.89	454740	14.25	540988	17.38
ZZZZZZ	122160	4.69	453148	5.61	231663	7.02	359426	8.90	411844	14.21	531802	17.36
ZZZZZZ	121758	4.69	426011	5.62	250389	7.04	373682	8.94	452388	14.29	564759	17.41
ZZZZZZ	71171	4.70	261953	5.62	160357	7.04	247936	8.95	328112	14.33	336089	17.46
ZZZZZZ	70150	4.70	269206	5.62	166845	7.03	246283	8.94	348828	14.36	396655	17.53
ZZZZZZ	69689	4.70	253989	5.62	147772	7.04	222296	8.94	274105	14.34	342675	17.52
ZZZZZZ	68861	4.70	273342	5.62	170492	7.04	262188	8.95	206411*	14.28	220694*	17.39
JC7897-2	83502	4.70	323063	5.62	195475	7.04	293582	8.94	262767*	14.25	176728*	17.33

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Method: SW846 8270D

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JC7897-1	5P23390.D	65	68	74	86	87	86
JC7897-2	5P23388.D	56	61	81	66	88	92
JC7897-2	Z106084.D	44	47	89	51	75	84
JC7897-3	5P23389.D	74	78	85	86	94	95
OP88822-BS1	Z106072.D	67	66	91	74	79	77
OP88822-BS1	5P23283.D	78	76	71	84	84	86
OP88822-MB1	Z106071.D	73	69	96	87	90	87
OP88822-MB1	5P23284.D	82	83	71	94	93	94
OP88822-MS	5P23291.D	68	70	67	74	79	80
OP88822-MSD	5P23292.D	69	68	62	74	72	70

Surrogate
Compounds

Recovery
Limits

S1 = 2-Fluorophenol	30-106%
S2 = Phenol-d5	30-106%
S3 = 2,4,6-Tribromophenol	24-140%
S4 = Nitrobenzene-d5	26-122%
S5 = 2-Fluorobiphenyl	36-112%
S6 = Terphenyl-d14	36-132%

Initial Calibration Summary

Job Number: JC7897

Sample: E5P1165-ICC1165

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P22783.D

Project: Sunoco - Marcus Hook Facility, PA

Response Factor Report MS5P

Method : C:\msdchem\1\METHODS\M5P1165.M (RTE Integrator)

Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um

Last Update : Wed Nov 04 14:47:17 2015

Response via : Initial Calibration

Calibration Files

2 =5p22776.D	5 =5p22779.D	25 =5p22782.D	80 =5p22781.D
100 =5p22784.D	50 =5p22783.D	1 =5p22778.D	10 =5p22780.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
<hr/>										
1) I 1,4-Dichlorobenzene-d							-----ISTD-----			
2) 1,4-Dioxane	0.564	0.699	0.587	0.573	0.580	0.582	0.621	0.634	0.605	7.43
3) Pyridine	1.506	1.540	1.503	1.483	1.488	1.450	1.646	1.553	1.521	3.94
4) N-Nitrosodim	0.993	0.931	0.933	0.855	0.914	0.881	1.061	0.932	0.937	6.86
5) 2-Fluorophen	1.467	1.444	1.404	1.394	1.437	1.369	1.515	1.468	1.437	3.28
6) Indene	2.853	2.769	2.671	2.501	2.544	2.524	2.747	2.823	2.679	5.23
7) Cumene	3.473	3.398	3.161	3.070	3.110	3.104	3.679	3.461	3.307	6.81
8) Phenol-d5	1.753	1.758	1.761	1.633	1.665	1.646	1.733	1.804	1.719	3.64
9) Phenol	2.028	1.954	1.954	1.819	1.876	1.858	2.004	1.995	1.936	3.92
10) Aniline	2.322	2.328	2.238	1.609	2.089	2.091	2.302	2.266	2.156	11.16
11) bis(2-Chloro	1.439	1.375	1.369	1.271	1.325	1.297	1.377	1.408	1.358	4.16
12) 2-Chlorophen	1.586	1.538	1.504	1.448	1.475	1.434	1.656	1.557	1.525	4.90
13) Decane	1.520	1.404	1.238	1.157	1.153	1.187	1.661	1.365	1.336	13.94
14) 1,3-Dichloro	1.626	1.676	1.614	1.513	1.565	1.535	1.601	1.691	1.603	3.94
15) 1,4-Dichloro	1.690	1.685	1.632	1.531	1.560	1.568	1.820	1.693	1.647	5.75
16) Benzyl alcoh	0.953	0.914	0.955	0.899	0.914	0.893	0.905	0.962	0.925	3.01
17) 1,2-Dichloro	1.592	1.570	1.537	1.421	1.455	1.456	1.754	1.615	1.550	7.01
18) Acetophenone	1.978	2.025	1.941	1.822	1.857	1.842	1.941	1.995	1.925	3.95
19) 2-Methylphen	1.326	1.311	1.353	1.177	1.257	1.264	1.357	1.340	1.298	4.76
20) 2,2'-oxybis(2.013	1.836	1.739	1.522	1.571	1.633	2.007	1.805	1.766	10.52
21) 3&4-Methylph	1.389	1.397	1.485	1.367	1.408	1.378	1.247	1.450	1.390	5.02
22) n-Nitroso-di	0.976	0.987	1.015	0.884	0.948	0.929	1.034	0.983	0.970	4.98
23) Hexachloroet	0.511	0.505	0.487	0.465	0.487	0.467	0.512	0.508	0.493	3.90
24) I Naphthalene-d8							-----ISTD-----			
25) Nitrobenzene	0.355	0.345	0.340	0.328	0.323	0.332	0.388	0.350	0.345	5.87
26) Nitrobenzene	0.376	0.357	0.350	0.338	0.333	0.342	0.356	0.367	0.352	4.09
27) Quinoline	0.802	0.770	0.784	0.765	0.738	0.755	0.773	0.798	0.773	2.78
28) Isophorone	0.652	0.651	0.631	0.597	0.598	0.623	0.635	0.650	0.630	3.57
29) 2-Nitropheno	0.195	0.205	0.201	0.200	0.198	0.197	0.187	0.203	0.198	2.74
30) 2,4-Dimethyl	0.292	0.272	0.344	0.322	0.327	0.334	0.305	0.287	0.310	8.12
31) Benzoic acid	0.187	0.261	0.285	0.282	0.266		0.220	0.250		15.48
32) bis(2-Chloro	0.424	0.423	0.424	0.393	0.399	0.409	0.434	0.420	0.416	3.37
33) 2,4-Dichloro	0.269	0.291	0.297	0.292	0.287	0.291	0.296	0.312	0.292	4.11
34) 2,6-Dichloro	0.290	0.308	0.292	0.278	0.279	0.284	0.280	0.295	0.288	3.55
35) 1,3,5-Trichl	0.332	0.344	0.317	0.319	0.307	0.313	0.380	0.342	0.332	7.14
36) 1,2,4-Trichl	0.312	0.328	0.318	0.297	0.301	0.308	0.346	0.329	0.317	5.12
37) 1,2,3-Trichl	0.300	0.313	0.300	0.298	0.290	0.302	0.332	0.321	0.307	4.53
38) Naphthalene	1.159	1.172	1.274	1.070	1.175	1.231	1.261	1.194	1.192	5.44
39) 4-Chloroanil	0.466	0.503	0.484	0.422	0.454	0.469	0.448	0.502	0.469	5.92
40) 2,3-Dichloro	0.380	0.388	0.369	0.359	0.353	0.355	0.380	0.384	0.371	3.75
41) Caprolactam	0.167	0.154	0.150	0.150	0.144	0.146	0.188	0.156	0.157	9.21
42) Hexachlororobu	0.151	0.154	0.147	0.144	0.145	0.149	0.160	0.153	0.150	3.56
43) 4-Chloro-3-m	0.289	0.312	0.315	0.298	0.294	0.304	0.303	0.314	0.304	3.13
44) 2-Methylnaph	0.629	0.618	0.603	0.570	0.557	0.580	0.633	0.637	0.603	5.12
45) 1-Methylnaph	0.636	0.635	0.616	0.584	0.572	0.600	0.612	0.657	0.614	4.59

Initial Calibration Summary

Page 3 of 3

Job Number: JC7897

Sample: E5P1165-ICC1165

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P22783.D

Project: Sunoco - Marcus Hook Facility, PA

93) Di-n-octylph	1.312	1.389	1.401	1.355	1.393	1.385	1.455	1.384	1.384	2.93
94) Benzo[b]fluo	1.064	1.155	1.243	1.068	1.244	1.240	1.171	1.149	1.167	6.32
95) Benzo[k]fluo	1.099	1.116	1.257	1.060	1.216	1.161	1.335	1.134	1.172	7.78
96) Benzo[a]pyre	0.969	1.030	1.179	1.015	1.184	1.140	1.139	1.050	1.088	7.53
97) Indeno[1,2,3	0.954	1.035	1.185	1.077	1.221	1.163	1.113	1.009	1.094	8.46
98) Dibenz(a,h)a	0.874	0.932	0.924	0.922	0.929	0.897	0.970	0.943	0.924	3.14
99) Dibenz[a,h]a	1.000	1.064	1.216	1.054	1.228	1.168	1.202	1.066	1.125	7.86
100) 7,12-Dimethy	0.373	0.408	0.518	0.478	0.499	0.497	0.466	0.451	0.461	10.67
101) Benzo[g,h,i]	1.135	1.115	1.242	1.084	1.238	1.197	1.257	1.115	1.173	5.82

(#) = Out of Range ### = Number of calibration levels exceeded format ###

M5P1165.M

Wed Nov 04 14:53:46 2015 RPT1

Initial Calibration Summary

Job Number: JC7897

Sample: E5P1166-ICC1166

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P22792.D

Project: Sunoco - Marcus Hook Facility, PA

Response Factor Report MS5P

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)

Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um

Last Update : Wed Nov 04 18:27:28 2015

Response via : Initial Calibration

Calibration Files

2	=5p22788.D	5	=5p22789.D	25	=5p22791.D	80	=5p22793.D
100	=5p22794.D	50	=5p22792.D	1	=5p22787.D	10	=5p22790.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
----------	---	---	----	----	-----	----	---	----	-----	------

102)	1,4-Dichlorobenzene-d	-----ISTD-----									
103)	Benzaldehyde	1.518	1.019	1.132	1.080	1.030	1.089	1.247	1.170	1.161	14.02
104)	Acenaphthene-d10a	-----ISTD-----									
105)	1,2,4,5-Tetr	0.579	0.434	0.476	0.461	0.445	0.475	0.504	0.485	0.482	9.30
106)	Chrysene-d12a	-----ISTD-----									
107)	Benzidine	0.529	0.656	0.648	0.411	0.319	0.475	0.803	0.727	0.571	28.94
		----- Quadratic regression ----- Coefficient = 0.9952									
		Response Ratio = 0.00412 + 0.68956 *A + -0.14729 *A^2									
108)	1-chloroocta	0.369	0.287	0.334	0.305	0.289	0.313	0.323	0.329	0.319	8.43
109)	Phenanthrene-d10a	-----ISTD-----									
110)	o-terphenyl	0.644	0.480	0.508	0.494	0.474	0.502	0.563	0.530	0.524	10.72
111)	Atrazine	0.125	0.094	0.104	0.104	0.099	0.103	0.123	0.103	0.107	10.55
112)	I Naphthalene-d8a	-----ISTD-----									
113)	Hydroquinone	0.375	0.287	0.357	0.380	0.378	0.351	0.287	0.345	0.345	11.91

(#) = Out of Range ### Number of calibration levels exceeded format ###

M5P1165.M

Thu Nov 05 09:48:13 2015

RPT1

Initial Calibration Verification

Job Number: JC7897

Sample: E5P1166-ICV1165

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 5P22795.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22795.D Vial: 10
 Acq On : 4 Nov 2015 6:30 pm Operator: alicjap
 Sample : icv1165-50 Inst : MS5P
 Misc : op88593,e5p1166 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 04 18:27:28 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	105	0.00	5.24
9 t	Phenol	1.936	1.913	1.2	108	0.00	4.89
12 t	2-Chlorophenol	1.525	1.596	-4.7	117	0.00	5.02
19 t	2-Methylphenol	1.298	1.435	-10.6	119	-0.01	5.55
21 t	3&4-Methylphenol	1.390	1.512	-8.8	115	0.00	5.73
24 I	Naphthalene-d8	1.000	1.000	0.0	107	0.00	6.70
29 t	2-Nitrophenol	0.198	0.202	-2.0	110	0.00	6.26
30 t	2,4-Dimethylphenol	0.310	0.372	-20.0	120	0.00	6.34
31 t	Benzoic acid	0.250	0.240	4.0	97	-0.02	6.48
33 t	2,4-Dichlorophenol	0.292	0.312	-6.8	115	0.00	6.56
34 t	2,6-Dichlorophenol	0.288	0.316	-9.7	119	0.00	6.82
43 t	4-Chloro-3-methylphenol	0.304	0.325	-6.9	115	-0.02	7.42
47 I	Acenaphthene-d10	1.000	1.000	0.0	108	0.00	8.82
49 t	2,4,6-Trichlorophenol	0.343	0.338	1.5	111	-0.01	7.92
50 t	2,4,5-Trichlorophenol	0.367	0.377	-2.7	114	-0.01	7.97
60 t	2,4-Dinitrophenol	50.000	40.268	True	Calc.	% Drift	-----
61 t	4-Nitrophenol	0.149	0.150	-----	19.5	78	-0.01
64	2,3,4,6-Tetrachlorophenol	0.276	0.267	AvgRF	CCRF	% Dev	-----
69 I	Phenanthrene-d10	1.000	1.000	-----	-----	-----	10.64
70 t	4,6-Dinitro-2-methylpheno	50.000	43.856	True	Calc.	% Drift	-----
76 t	Pentachlorophenol	50.000	48.152	50.000	48.152	12.3	95 -0.01
						9.56	10.42

(#) = Out of Range
 5p22792a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
 Wed Nov 04 19:21:46 2015 RPT1

Initial Calibration Verification

Job Number: JC7897

Sample: E5P1166-ICV1165

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 5P22796.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22796.D Vial: 11
 Acq On : 4 Nov 2015 6:57 pm Operator: alicjap
 Sample : icv1165-50 Inst : MS5P
 Misc : op88593,e5p1166 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 04 18:27:28 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	128	0.00
3 t	Pyridine	1.521	1.618	-6.4	143	0.06
10	Aniline	2.156	2.123	1.5	130	0.00
16 t	Benzyl alcohol	0.925	0.938	-1.4	135	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	132	0.00
44 t	2-Methylnaphthalene	0.603	0.549	9.0	125	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	128	0.00
54 t	2-Nitroaniline	0.311	0.282	9.3	125	0.00
58 t	3-Nitroaniline	0.350	0.308	12.0	117	-0.01
62 t	Dibenzofuran	1.622	1.472	9.2	124	0.00
68 t	4-Nitroaniline	0.345	0.316	8.4	120	-0.01
69 I	Phenanthrene-d10	1.000	1.000	0.0	124	0.00
79 t	Carbazole	1.143	1.040	9.0	123	0.00

(#) = Out of Range
 5p22792a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
 Wed Nov 04 19:21:48 2015 RPT1

Initial Calibration Verification

Page 1 of 1

Job Number: JC7897

Sample: E5P1166-ICV1166

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P22797A.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22797a.D Vial: 12
Acq On : 4 Nov 2015 7:24 pm Operator: alicjap
Sample : icv1166-50 Inst : MS5P
Misc : op88593,e5p1166 Multiplr: 1.00
MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update : Wed Nov 04 18:27:28 2015
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
104 Acenaphthene-d10a	1.000	1.000	0.0	91	0.00	8.82
105 1,2,4,5-Tetrachlorobenzen	0.482	0.470	2.5	90	0.00	7.77

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Wed Nov 04 21:42:27 2015 RPT1

Initial Calibration Verification

Job Number: JC7897

Sample: E5P1166-ICV1165

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 5P22797.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22797.D Vial: 12
 Acq On : 4 Nov 2015 7:24 pm Operator: alicjap
 Sample : icv1165-50 Inst : MS5P
 Misc : op88593,e5p1166 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 04 18:27:28 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	120	0.00	5.24
4 t	N-Nitrosodimethylamine	0.937	0.839	10.5	115	0.00	2.53
11 t	bis(2-Chloroethyl)ether	1.358	1.309	3.6	121	0.00	4.95
14 t	1,3-Dichlorobenzene	1.603	1.507	6.0	118	0.00	5.18
15 t	1,4-Dichlorobenzene	1.647	1.509	8.4	116	0.00	5.26
17 t	1,2-Dichlorobenzene	1.550	1.475	4.8	122	0.00	5.43
20 t	2,2'-oxybis(1-Chloropropyl)	1.766	1.555	11.9	115	0.00	5.56
22 t	n-Nitroso-di-n-propylamin	0.970	0.884	8.9	115	-0.01	5.70
23 t	Hexachloroethane	0.493	0.470	4.7	121	0.00	5.81
24 I	Naphthalene-d8	1.000	1.000	0.0	122	0.00	6.70
26 t	Nitrobenzene	0.352	0.329	6.5	117	0.00	5.89
28 t	Isophorone	0.630	0.617	2.1	121	-0.01	6.17
32 t	bis(2-Chloroethoxy)methan	0.416	0.408	1.9	122	0.00	6.43
36 t	1,2,4-Trichlorobenzene	0.317	0.299	5.7	118	0.00	6.65
38 t	Naphthalene	1.192	1.040	12.8	103	0.00	6.73
42 t	Hexachlorobutadiene	0.150	0.148	1.3	121	0.00	6.90
47 I	Acenaphthene-d10	1.000	1.000	0.0	120	0.00	8.82
48 t	Hexachlorocyclopentadiene	0.282	0.260	7.8	104	0.00	7.77
52 t	2-Chloronaphthalene	1.127	1.053	6.6	119	0.00	8.15
55 t	Dimethylphthalate	1.248	1.159	7.1	115	0.00	8.51
56 t	Acenaphthylene	1.971	1.632	17.2	96	0.00	8.64
57 t	2,6-Dinitrotoluene	0.289	0.263	9.0	114	0.00	8.57
59 t	Acenaphthene	1.210	1.090	9.9	106	0.00	8.86
63 t	2,4-Dinitrotoluene	0.386	0.348	9.8	110	0.00	9.07
65 t	Diethylphthalate	1.263	1.164	7.8	117	0.00	9.37
66 t	Fluorene	1.374	1.224	10.9	106	0.00	9.48
67 t	4-Chlorophenyl-phenylethe	0.569	0.543	4.6	118	0.00	9.49
69 I	Phenanthrene-d10	1.000	1.000	0.0	123	0.00	10.64
71 t	n-Nitrosodiphenylamine	0.606	0.497	18.0	107	0.00	9.64
72 t	1,2-Diphenylhydrazine	0.778	0.690	11.3	119	0.00	9.69
74 t	4-Bromophenyl-phenylether	0.211	0.191	9.5	115	0.00	10.09
75 t	Hexachlorobenzene	0.230	0.203	11.7	117	0.00	10.17
77 t	Phenanthrene	1.246	1.040	16.5	106	0.00	10.67
78 t	Anthracene	1.239	1.063	14.2	104	-0.01	10.74
80 t	Di-n-butylphthalate	1.313	1.222	6.9	115	0.00	11.47
81 t	Fluoranthene	1.263	1.123	11.1	109	0.00	12.30
83 I	Chrysene-d12	1.000	1.000	0.0	121	0.00	14.43
84 t	Pyrene	1.377	1.195	13.2	108	0.00	12.62

Initial Calibration Verification

Page 2 of 2

Job Number: JC7897

Sample: E5P1166-ICV1165

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P22797.D

Project: Sunoco - Marcus Hook Facility, PA

86 t	Butylbenzylphthalate	0.591	0.564	4.6	119	0.00	13.65
88 t	Benzo[a]anthracene	1.210	1.027	15.1	107	0.00	14.42
89 t	3,3'-Dichlorobenzidine	0.404	0.328	18.8	102	0.00	14.41
90 t	Chrysene	1.199	1.039	13.3	107	0.00	14.48
91 t	bis(2-Ethylhexyl)phthalat	0.824	0.793	3.8	120	0.00	14.57
92 I	Perylene-d12	1.000	1.000	0.0	123	0.00	16.50
93 t	Di-n-octylphthalate	1.384	1.356	2.0	121	0.00	15.53
94 t	Benzo[b]fluoranthene	1.167	1.058	9.3	105	-0.01	15.99
95 t	Benzo[k]fluoranthene	1.172	1.087	7.3	115	-0.02	16.03
96 t	Benzo[a]pyrene	1.088	1.031	5.2	111	-0.01	16.43
97 t	Indeno[1,2,3-cd]pyrene	1.094	0.972	11.2	103	-0.02	18.10
99 t	Dibenz[a,h]anthracene	1.125	1.021	9.2	108	-0.02	18.14
101 t	Benzo[g,h,i]perylene	1.173	1.008	14.1	104	-0.02	18.56

(#) = Out of Range
5p22792a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
Wed Nov 04 21:41:02 2015 RPT1

Initial Calibration Verification

Job Number: JC7897

Sample: E5P1166-ICV1166

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P22798A.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22798a.D Vial: 13
 Acq On : 4 Nov 2015 7:51 pm Operator: alicjap
 Sample : icv1166-50 Inst : MS5P
 Misc : op88593,e5p1166 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 04 18:27:28 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	87	0.00	5.24
103	Benzaldehyde	1.161	1.107	4.7	88	0.00	4.75
109	Phenanthrene-d10a	1.000	1.000	0.0	97	0.00	10.64
111	Atrazine	0.107	0.103	3.7	97	-0.01	10.32

(#) = Out of Range
 5p22792a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
 Wed Nov 04 20:52:20 2015 RPT1

Initial Calibration Verification

Job Number: JC7897

Sample: E5P1166-ICV1165

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 5P22798.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22798.D Vial: 13
 Acq On : 4 Nov 2015 7:51 pm Operator: alicjap
 Sample : icv1165-50 Inst : MS5P
 Misc : op88593,e5p1166 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 04 18:27:28 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	123	0.00	5.24
2 t	1,4-Dioxane	0.605	0.546	9.8	116	0.00	2.26
6 t	Indene	2.679	2.542	5.1	124	0.00	5.53
7 t	Cumene	3.307	3.082	6.8	122	0.00	4.38
13 t	Decane	1.336	1.132	15.3	117	0.00	5.08
18 t	Acetophenone	1.925	1.859	3.4	124	0.00	5.69
24 I	Naphthalene-d8	1.000	1.000	0.0	125	0.00	6.70
27 t	Quinoline	0.773	0.754	2.5	125	0.00	7.13
40 t	2,3-Dichloroaniline	0.371	0.326	12.1	114	0.00	7.91
41 t	Caprolactam	0.157	0.138	12.1	118	-0.05	7.19
45 t	1-Methylnaphthalene	0.614	0.583	5.0	121	0.00	7.68
46 t	Dimethylnaphthalene	0.620	0.619	0.2	129	0.00	8.32
47 I	Acenaphthene-d10	1.000	1.000	0.0	125	0.00	8.82
53 t	Biphenyl	1.487	1.382	7.1	124	0.00	8.13
69 I	Phenanthrene-d10	1.000	1.000	0.0	123	0.00	10.64
82 t	Octadecane	0.480	0.441	8.1	123	0.00	10.57
83 I	Chrysene-d12	1.000	1.000	0.0	121	-0.01	14.43
92 I	Perylene-d12	1.000	1.000	0.0	120	0.00	16.50
100 t	7,12-Dimethylbenz(a)anthr	0.461	0.512	-11.1	124	-0.02	15.98

(#) = Out of Range
 5p22792a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
 Wed Nov 04 20:53:02 2015 RPT1

Initial Calibration Verification

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1166-ICV1166

Lab FileID: 5P22800.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22800.D Vial: 15
 Acq On : 4 Nov 2015 8:46 pm Operator: sarad
 Sample : icv1166-50 Inst : MS5P
 Misc : op88593,e5p1166 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 04 18:27:28 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
112 I Naphthalene-d8a	1.000	1.000	0.0	98	0.00	6.70
113 Hydroquinone	0.345	0.370	-7.2	104	0.00	7.26

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 5p22792a.D M5P1165.M Wed Nov 04 21:12:06 2015 RPT1

Initial Calibration Verification

Job Number: JC7897

Sample: E5P1166-ICV1165

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 5P22802.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22802.D Vial: 17
 Acq On : 4 Nov 2015 9:40 pm Operator: sarad
 Sample : icv1165-50 Inst : MS5P
 Misc : op88593,e5p1166 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 04 18:27:28 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	180	0.00
5 S	2-Fluorophenol	1.437	1.478	-2.9	195	0.00
8 S	Phenol-d5	1.719	1.767	-2.8	193	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	184	0.00
25 S	Nitrobenzene-d5	0.345	0.347	-0.6	192	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	180	0.00
51 S	2-Fluorobiphenyl	1.266	1.240	2.1	185	0.00
69 I	Phenanthrene-d10	1.000	1.000	0.0	177	0.00
73 S	2,4,6-Tribromophenol	0.110	0.099	10.0	169	0.00
83 I	Chrysene-d12	1.000	1.000	0.0	175	0.00
85 S	Terphenyl-d14	0.820	0.781	4.8	180	0.00

(#) = Out of Range
 5p22792a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
 Wed Nov 04 22:03:42 2015 RPT1

Continuing Calibration Summary

Job Number: JC7897

Sample: E5P1185-CC1165

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 5P23280.D

87	Butyl stearate	0.324	0.358	-10.5	113	-0.14	13.68
88 t	Benzo[a]anthracene	1.210	1.166	3.6	97	-0.13	14.32
89 t	3,3'-Dichlorobenzidine	0.404	0.399	1.2	99	-0.13	14.31
90 t	Chrysene	1.199	1.164	2.9	96	-0.13	14.37
91 t	bis(2-Ethylhexyl)phthalat	0.824	0.915	-11.0	110	-0.14	14.45
92 I	Perylene-d12	1.000	1.000	0.0	94	-0.14	16.40
93 t	Di-n-octylphthalate	1.384	1.630	-17.8	110	-0.15	15.42
94 t	Benzo[b]fluoranthene	1.167	1.300	-11.4	98	-0.14	15.89
95 t	Benzo[k]fluoranthene	1.172	1.192	-1.7	96	-0.14	15.93
96 t	Benzo[a]pyrene	1.088	1.144	-5.1	94	-0.14	16.33
97 t	Indeno[1,2,3-cd]pyrene	1.094	1.234	-12.8	100	-0.19	17.97
98 t	Dibenz(a,h)acridine	0.924	0.929	-0.5	97	-0.18	17.60
99 t	Dibenz[a,h]anthracene	1.125	1.206	-7.2	97	-0.19	18.00
100 t	7,12-Dimethylbenz(a)anthr	0.461	0.491	-6.5	93	-0.15	15.88
101 t	Benzo[g,h,i]perylene	1.173	1.204	-2.6	94	-0.20	18.42

(#) = Out of Range
5p22792a.D M5P1165.MSPCC's out = 0 CCC's out = 0
Tue Nov 17 12:56:30 2015 RPT1

Continuing Calibration Summary

Job Number: JC7897

Sample: E5P1185-CC1166

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P23281.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1185\5p23281.D Vial: 3
 Acq On : 16 Nov 2015 2:28 pm Operator: alicjap
 Sample : cc1166-50 Inst : MS5P
 Misc : op88822,e5p1185,1000,,,1,1 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Fri Nov 13 19:32:26 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	82	-0.02	5.14
103	Benzaldehyde	1.161	1.022	12.0	77	-0.02	4.66
104	Acenaphthene-d10a	1.000	1.000	0.0	84	-0.03	8.72
105	1,2,4,5-Tetrachlorobenzene	0.482	0.481	0.2	85	-0.04	7.67
106	Chrysene-d12a	1.000	1.000	0.0	80	-0.13	14.33
107	Benzidine	True 50.000	Calc. 63.938	% Drift -27.9#	98	-0.13	12.41
108	Phenanthrene-d10a	1.000	1.000	0.0	83	-0.06	10.54
109	Atrazine	0.107	0.102	4.7	83	-0.05	10.23
110 I	Naphthalene-d8a	1.000	1.000	0.0	82	-0.04	6.61
111	Hydroquinone	0.345	0.332	3.8	78	-0.02	7.19

(#) = Out of Range
 5p22792a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
 Tue Nov 17 12:57:27 2015 RPT1

Continuing Calibration Summary

Job Number: JC7897

Sample: E5P1190-CC1165

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 5P23373.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1190\5p23373.D Vial: 2
 Acq On : 18 Nov 2015 8:39 pm Operator: sarad
 Sample : cc1165-25 Inst : MS5P
 Misc : op89030,e5p1190 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 18 14:22:41 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	83	-0.02	5.11
2 t	1,4-Dioxane	0.605	0.498	17.7	71	-0.06	2.15
3 t	Pyridine	1.521	1.220	19.8	68	-0.04	2.46
4 t	N-Nitrosodimethylamine	0.937	0.742	20.8#	66	-0.04	2.43
5 S	2-Fluorophenol	1.437	1.177	18.1	70	-0.02	3.77
6 t	Indene	2.679	2.230	16.8	69	0.00	5.40
7 t	Cumene	3.307	2.879	12.9	76	-0.04	4.25
8 S	Phenol-d5	1.719	1.474	14.3	70	0.00	4.78
9 t	Phenol	1.936	1.536	20.7#	65	0.00	4.79
10	Aniline	2.156	1.570	27.2#	58	-0.02	4.75
11 t	bis(2-Chloroethyl)ether	1.358	1.130	16.8	69	-0.02	4.82
12 t	2-Chlorophenol	1.525	1.301	14.7	72	-0.01	4.90
13 t	Decane	1.336	1.282	4.0	86	-0.02	4.95
14 t	1,3-Dichlorobenzene	1.603	1.563	2.5	81	-0.02	5.05
15 t	1,4-Dichlorobenzene	1.647	1.580	4.1	81	-0.02	5.13
16 t	Benzyl alcohol	0.925	0.807	12.8	70	0.00	5.28
17 t	1,2-Dichlorobenzene	1.550	1.483	4.3	80	-0.01	5.30
18 t	Acetophenone	1.925	1.655	14.0	71	0.00	5.57
19 t	2-Methylphenol	1.298	1.086	16.3	67	0.01	5.45
20 t	2,2'-oxybis(1-Chloropropane)	1.766	1.716	2.8	82	0.00	5.43
21 t	3&4-Methylphenol	1.390	1.211	12.9	68	0.02	5.63
22 t	n-Nitroso-di-n-propylamin	0.970	0.849	12.5	70	0.00	5.58
23 t	Hexachloroethane	0.493	0.513	-4.1	88	-0.01	5.67
24 I	Naphthalene-d8	1.000	1.000	0.0	77	-0.02	6.58
25 S	Nitrobenzene-d5	0.345	0.337	2.3	77	-0.03	5.74
26 t	Nitrobenzene	0.352	0.342	2.8	76	-0.03	5.76
27 t	Quinoline	0.773	0.677	12.4	67	0.00	7.00
28 t	Isophorone	0.630	0.584	7.3	72	-0.03	6.04
29 t	2-Nitrophenol	0.198	0.205	-3.5	79	-0.02	6.13
30 t	2,4-Dimethylphenol	0.310	0.284	8.4	64	0.00	6.23
31 t	Benzoic acid	0.250	0.241	3.6	72	0.01	6.40
32 t	bis(2-Chloroethoxy)methane	0.416	0.359	13.7	65	-0.02	6.31
33 t	2,4-Dichlorophenol	0.292	0.306	-4.8	80	0.00	6.45
34 t	2,6-Dichlorophenol	0.288	0.298	-3.5	79	0.00	6.70
35 t	1,3,5-Trichlorobenzene	0.332	0.333	-0.3	81	-0.02	6.15
36 t	1,2,4-Trichlorobenzene	0.317	0.320	-0.9	78	-0.02	6.52
37 t	1,2,3-Trichlorobenzene	0.307	0.309	-0.7	80	-0.01	6.78
38 t	Naphthalene	1.192	1.135	4.8	69	-0.02	6.60
39 t	4-Chloroaniline	0.469	0.380	19.0	61	0.00	6.69
40 t	2,3-Dichloroaniline	0.371	0.375	-1.1	79	0.01	7.78
41 t	Caprolactam	0.157	0.148	5.7	76	-0.01	7.10

Continuing Calibration Summary

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PASample: E5P1190-CC1165
Lab FileID: 5P23373.D

42 t	Hexachlorobutadiene	0.150	0.162	-8.0	85	-0.02	6.76
43 t	4-Chloro-3-methylphenol	0.304	0.288	5.3	71	0.02	7.32
44 t	2-Methylnaphthalene	0.603	0.590	2.2	76	0.00	7.43
45 t	1-Methylnaphthalene	0.614	0.616	-0.3	77	0.00	7.55
46 t	Dimethylnaphthalene	0.620	0.633	-2.1	78	0.01	8.19
47 I	Acenaphthene-d10	1.000	1.000	0.0	77	-0.02	8.69
48 t	Hexachlorocyclopentadiene	0.282	0.251	11.0	64	-0.04	7.63
49 t	2,4,6-Trichlorophenol	0.343	0.352	-2.6	81	-0.02	7.81
50 t	2,4,5-Trichlorophenol	0.367	0.371	-1.1	78	0.00	7.87
51 S	2-Fluorobiphenyl	1.266	1.226	3.2	77	-0.03	7.88
52 t	2-Chloronaphthalene	1.127	1.082	4.0	76	-0.03	8.01
53 t	Biphenyl	1.487	1.414	4.9	76	-0.03	8.00
54 t	2-Nitroaniline	0.311	0.319	-2.6	83	-0.01	8.16
55 t	Dimethylphthalate	1.248	1.270	-1.8	79	-0.02	8.38
56 t	Acenaphthylene	1.971	2.045	-3.8	75	-0.02	8.52
57 t	2,6-Dinitrotoluene	0.289	0.282	2.4	78	0.00	8.46
58 t	3-Nitroaniline	0.350	0.325	7.1	74	0.00	8.67
59 t	Acenaphthene	1.210	1.264	-4.5	77	-0.02	8.72
-----		True	Calc.	% Drift	-----		
60 t	2,4-Dinitrophenol	50.000	51.984	-4.0	81	0.00	8.80
-----		AvgRF	CCRF	% Dev	-----		
61 t	4-Nitrophenol	0.149	0.174	-16.8	89	-0.05	8.96
62 t	Dibenzofuran	1.622	1.548	4.6	77	-0.01	8.94
63 t	2,4-Dinitrotoluene	0.386	0.390	-1.0	80	0.00	8.95
64	2,3,4,6-Tetrachlorophenol	0.276	0.261	5.4	74	0.00	9.12
65 t	Diethylphthalate	1.263	1.303	-3.2	83	0.00	9.24
66 t	Fluorene	1.374	1.443	-5.0	78	0.00	9.35
67 t	4-Chlorophenyl-phenylether	0.569	0.568	0.2	78	-0.01	9.36
68 t	4-Nitroaniline	0.345	0.308	10.7	69	0.00	9.41
69 I	Phenanthrene-d10	1.000	1.000	0.0	78	-0.02	10.51
-----		True	Calc.	% Drift	-----		
70 t	4,6-Dinitro-2-methylpheno	25.000	26.420	-5.7	82	0.00	9.46
-----		AvgRF	CCRF	% Dev	-----		
71 t	n-Nitrosodiphenylamine	0.606	0.579	4.5	77	-0.02	9.51
72 t	1,2-Diphenylhydrazine	0.778	0.707	9.1	74	-0.03	9.55
73 S	2,4,6-Tribromophenol	0.110	0.093	15.5	69	-0.02	9.65
74 t	4-Bromophenyl-phenylether	0.211	0.197	6.6	73	-0.02	9.95
75 t	Hexachlorobenzene	0.230	0.197	14.3	69	-0.02	10.04
-----		True	Calc.	% Drift	-----		
76 t	Pentachlorophenol	50.000	54.227	-8.5	89	0.00	10.31
-----		AvgRF	CCRF	% Dev	-----		
77 t	Phenanthrene	1.246	1.251	-0.4	78	-0.02	10.54
78 t	Anthracene	1.239	1.267	-2.3	76	-0.02	10.60
79 t	Carbazole	1.143	1.062	7.1	76	-0.01	10.83
80 t	Di-n-butylphthalate	1.313	1.422	-8.3	83	-0.02	11.33
81 t	Fluoranthene	1.263	1.321	-4.6	78	0.00	12.15
82 t	Octadecane	0.480	0.460	4.2	78	-0.02	10.42
83 I	Chrysene-d12	1.000	1.000	0.0	75	-0.02	14.29
84 t	Pyrene	1.377	1.484	-7.8	79	-0.04	12.47
85 S	Terphenyl-d14	0.820	0.767	6.5	74	-0.04	12.73
86 t	Butylbenzylphthalate	0.591	0.675	-14.2	86	-0.04	13.49

Continuing Calibration Summary

Page 3 of 3

Job Number: JC7897

Sample: E5P1190-CC1165

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P23373.D

Project: Sunoco - Marcus Hook Facility, PA

87	Butyl stearate	0.324	0.352	-8.6	82	-0.04	13.64
88 t	Benzo[a]anthracene	1.210	1.242	-2.6	76	-0.03	14.27
89 t	3,3'-Dichlorobenzidine	0.404	0.400	1.0	73	-0.03	14.26
90 t	Chrysene	1.199	1.196	0.3	74	-0.03	14.33
91 t	bis(2-Ethylhexyl)phthalat	0.824	0.941	-14.2	87	-0.03	14.41
92 I	Perylene-d12	1.000	1.000	0.0	73	-0.02	16.36
93 t	Di-n-octylphthalate	1.384	1.677	-21.2#	88	-0.05	15.37
94 t	Benzo[b]fluoranthene	1.167	1.357	-16.3	80	-0.04	15.85
95 t	Benzo[k]fluoranthene	1.172	1.189	-1.5	69	-0.04	15.88
96 t	Benzo[a]pyrene	1.088	1.177	-8.2	73	-0.03	16.28
97 t	Indeno[1,2,3-cd]pyrene	1.094	1.261	-15.3	78	-0.08	17.91
98 t	Dibenz(a,h)acridine	0.924	0.930	-0.6	74	-0.07	17.54
99 t	Dibenz[a,h]anthracene	1.125	1.218	-8.3	74	-0.04	17.94
100 t	7,12-Dimethylbenz(a)anthr	0.461	0.492	-6.7	70	-0.05	15.84
101 t	Benzo[g,h,i]perylene	1.173	1.209	-3.1	72	-0.04	18.35

(#) = Out of Range
5p22791a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
Thu Nov 19 10:16:52 2015 RPT1

8.7.13

8

Continuing Calibration Summary

Job Number: JC7897

Sample: E5P1190-CC1166

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 5P23374.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1190\5p23374.D Vial: 3
 Acq On : 18 Nov 2015 9:06 pm Operator: saraw
 Sample : cc1166-25 Inst : MS5P
 Misc : op89030,e5p1190 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
 Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 Last Update : Wed Nov 18 14:22:41 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	105	-0.02	5.11
103	Benzaldehyde	1.161	0.929	20.0	86	-0.02	4.63
104	Acenaphthene-d10a	1.000	1.000	0.0	103	-0.02	8.69
105	1,2,4,5-Tetrachlorobenzene	0.482	0.490	-1.7	106	-0.03	7.64
106	Chrysene-d12a	1.000	1.000	0.0	105	-0.02	14.29
107	Benzidine	True 25.000	Calc. 14.516	% Drift 41.9#	61	-0.04	12.37
108	Phenanthrene-d10a	1.000	1.000	0.0	104	-0.02	10.51
109	Atrazine	0.107	0.106	0.9	106	-0.01	10.19
110 I	Naphthalene-d8a	1.000	1.000	0.0	103	-0.02	6.58
111	Hydroquinone	0.345	0.306	11.3	88	0.02	7.16

(#) = Out of Range
 5p22791a.D M5P1165.M

SPCC's out = 0 CCC's out = 0
 Thu Nov 19 10:17:58 2015 RPT1

Initial Calibration Summary

Job Number: JC7897

Sample: EZ5255-ICC5255

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105283.D

Project: Sunoco - Marcus Hook Facility, PA

Response Factor Report MSZ

Method : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Sat Oct 17 08:45:35 2015
 Response via : Initial Calibration

Calibration Files

100	=z105281.D	80	=z105282.D	50	=z105283.D	25	=z105284.D
10	=z105285.D	5	=z105286.D	2	=z105287.D	1	=z105288.D

Compound	100	80	50	25	10	5	2	1	Avg	%RSD
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102)	1,4-Dichlorobenzene-d	-----	ISTD-----								
103)	Benzaldehyde	0.990	1.034	1.136	1.083	1.086	1.008	1.322	1.114	1.097	9.52
104)	Phenanthrene-d10a	-----	ISTD-----								
105)	Atrazine	0.101	0.109	0.108	0.106	0.108	0.107	0.138	0.129	0.113	11.54
106)	Chrysene-d12a	-----	ISTD-----								
107)	Benzidine	0.430	0.486	0.591	0.655	0.713	0.596	0.529	0.683	0.586	16.80
108)	Acenaphthene-d10a	-----	ISTD-----								
109)	1,2,4,5-Tetr	0.410	0.442	0.477	0.484	0.514	0.479	0.651	0.537	0.499	14.57
110)	I Naphthalene-d8a	-----	ISTD-----								
111)	Hydroquinone	0.363	0.354	0.339	0.320	0.309	0.297	0.413	0.400	0.349	11.93

(#) = Out of Range ### Number of calibration levels exceeded format ###

MZ5255.M

Sat Oct 17 15:53:29 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5255-ICV5255

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105289.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5255\z105289.D Vial: 9
 Acq On : 16 Oct 2015 5:42 pm Operator: brittamp
 Sample : icv5255-50 Inst : MSZ
 Misc : op87826a,ez5255 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Sat Oct 17 08:45:35 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
108 Acenaphthene-d10a	1.000	1.000	0.0	93	0.00	7.28
109 1,2,4,5-Tetrachlorobenzen	0.499	0.539	-8.0	105	0.00	6.48

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 z105283a.D MZ5255.M Sat Oct 17 15:53:13 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5255-ICV5255

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105290.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5255\z105290.D Vial: 10
 Acq On : 16 Oct 2015 6:13 pm Operator: brittamp
 Sample : icv5255-50 Inst : MSZ
 Misc : op87826a,ez5255 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Sat Oct 17 08:45:35 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.

102 1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	97	0.00	4.89
103 Benzaldehyde	1.097	1.102	-0.5	94	0.00	4.57
104 Phenanthrene-d10a	1.000	1.000	0.0	95	0.00	9.22
105 Atrazine	0.113	0.105	7.1	92	0.01	8.79

(#) = Out of Range
 z105283a.D MZ5255.M

SPCC's out = 0 CCC's out = 0
 Sat Oct 17 15:53:16 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5255-ICV5255

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105291.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5255\z105291.D Vial: 11
 Acq On : 16 Oct 2015 6:44 pm Operator: brittamp
 Sample : icv5255-50 Inst : MSZ
 Misc : op87826a,ez5255 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Sat Oct 17 08:45:35 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
106 Chrysene-d12a	1.000	1.000	0.0	148	0.00	14.55
107 Benzidine	0.586	0.574	2.0	143	0.00	11.77

(#) = Out of Range
 z105283a.D MZ5255.M SPCC's out = 0 CCC's out = 0
 Sat Oct 17 15:53:18 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5255-ICV5255

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105292.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5255\z105292.D Vial: 12
 Acq On : 16 Oct 2015 7:14 pm Operator: brittamp
 Sample : icv5255-50 Inst : MSZ
 Misc : op87826a,ez5255 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Sat Oct 17 08:45:35 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
110 I Naphthalene-d8a	1.000	1.000	0.0	137	0.00	5.81
111 Hydroquinone	0.349	0.426	-22.1	172	0.00	6.10

(#) = Out of Range
 z105283a.D MZ5255.M SPCC's out = 0 CCC's out = 0
 Sat Oct 17 15:53:20 2015 RTE

Initial Calibration Summary

Job Number: JC7897

Sample: EZ5278-ICC5278

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105714.D

Project: Sunoco - Marcus Hook Facility, PA

Response Factor Report MSZ

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Tue Nov 03 09:57:31 2015
 Response via : Initial Calibration

Calibration Files

100	=z105281a.D	80	=z105282a.D	50	=z105283a.D	25	=z105284a.D
10	=z105285a.D	5	=z105286a.D	2	=z105287a.D	1	=z105288a.D

Compound	100	80	50	25	10	5	2	1	Avg	%RSD
<hr/>										
1) I 1,4-Dichlorobenzene-d									ISTD	
2) 1,4-Dioxane	0.597	0.618	0.685	0.667	0.687	0.594	0.645	0.504	0.624	9.76
3) Pyridine	1.616	1.516	1.719	1.706	1.505	1.337	1.370	1.228	1.500	11.87
4) N-Nitrosodim	0.944	0.927	1.009	0.943	0.885	0.776	0.805	0.722	0.876	11.28
5) 2-Fluorophen	1.486	1.474	1.619	1.567	1.367	1.392	1.248	1.487	1.455	8.08
6) Indene	2.655	2.579	2.785	2.907	2.593	2.695	2.474	2.528	2.652	5.34
7) Cumene	3.997	3.976	4.327	4.082	4.025	3.820	3.841	4.043	4.014	3.92
8) Phenol-d5	1.969	1.874	2.066	2.028	1.782	1.697	1.773	1.817	1.876	7.06
9) Phenol	2.104	2.029	2.234	2.262	2.067	2.010	1.937	2.176	2.102	5.42
10) Aniline	1.977	1.902	2.605	2.629	2.318	2.258	2.440	2.409	2.317	11.48
11) bis(2-Chloro	1.304	1.261	1.377	1.400	1.346	1.349	1.189	1.200	1.303	6.10
12) 2-Chlorophen	1.422	1.361	1.518	1.543	1.458	1.363	1.524	1.747	1.492	8.37
13) Decane	0.973	0.974	1.102	1.091	1.095	1.040	0.982	1.341	1.075	11.25
14) 1,3-Dichloro	1.520	1.493	1.655	1.681	1.648	1.652	1.379	1.613	1.580	6.69
15) 1,4-Dichloro	1.532	1.487	1.691	1.684	1.546	1.487	1.611	1.984	1.628	10.12
16) Benzyl alcoh	0.976	0.921	1.006	0.979	0.859	0.941	0.723	0.858	0.908	10.17
17) 1,2-Dichloro	1.411	1.370	1.524	1.540	1.539	1.430	1.375	1.413	1.450	4.99
18) Acetophenone	2.179	2.074	2.320	2.306	2.252	2.083	2.102	2.343	2.207	5.07
19) 2-Methylphen	1.282	1.211	1.378	1.436	1.293	1.252	1.190	1.271	1.289	6.37
20) 2,2'-oxybis(0.466	0.444	0.484	0.496	0.516	0.498	0.496	0.525	0.491	5.29
21) 3&4-Methylph	1.429	1.312	1.426	1.507	1.371	1.414	1.315	1.501	1.409	5.26
22) n-Nitroso-di	1.139	1.068	1.201	1.256	1.148	1.095	1.072	1.120	1.137	5.70
23) Hexachloroet	0.530	0.513	0.571	0.569	0.521	0.509	0.513	0.492	0.527	5.38
24) I Naphthalene-d8							ISTD			
25) Nitrobenzene	0.432	0.432	0.510	0.531	0.434	0.418	0.414	0.481	0.456	9.80
26) Nitrobenzene	0.435	0.433	0.470	0.472	0.457	0.428	0.434	0.483	0.452	4.80
27) Quinoline	0.768	0.747	0.775	0.800	0.745	0.732	0.698	0.717	0.748	4.40
28) Isophorone	0.772	0.753	0.816	0.843	0.719	0.714	0.699	0.865	0.773	8.09
29) 2-Nitropheno	0.216	0.217	0.229	0.224	0.211	0.195	0.169	0.201	0.208	9.16
30) 2,4-Dimethyl	0.420	0.408	0.461	0.486	0.352	0.356	0.358	0.395	0.404	12.35
31) Benzoic Acid	0.340	0.319	0.337	0.329	0.260	0.215		0.300		16.97
32) bis(2-Chloro	0.409	0.414	0.442	0.453	0.426	0.416	0.386	0.478	0.428	6.67
33) 2,4-Dichloro	0.316	0.302	0.323	0.333	0.303	0.280	0.300	0.304	0.308	5.29
34) 2,6-Dichloro	0.304	0.297	0.319	0.321	0.289	0.317	0.269	0.314	0.304	5.94
35) 1,3,5-Trichl	0.358	0.365	0.376	0.404	0.362	0.363	0.343	0.392	0.370	5.26
36) 1,2,4-Trichl	0.337	0.346	0.352	0.376	0.346	0.357	0.320	0.373	0.351	5.20
37) 1,2,3-Trichl	0.328	0.325	0.348	0.364	0.331	0.348	0.346	0.356	0.343	4.06
38) Naphthalene	1.079	1.075	1.163	1.172	1.124	1.081	1.065	1.119	1.110	3.74
39) 4-Chloroanil	0.427	0.413	0.478	0.489	0.450	0.431	0.422	0.446	0.444	6.09
40) 2,3-Dichloro	0.391	0.376	0.403	0.422	0.387	0.406	0.389	0.352	0.391	5.34
41) Caprolactam	0.132	0.126	0.136	0.134	0.126	0.128	0.106	0.136	0.128	7.51
42) Hexachlorobu	0.206	0.210	0.219	0.223	0.223	0.194	0.229	0.248	0.219	7.38
43) 4-Chloro-3-m	0.408	0.390	0.412	0.427	0.381	0.372	0.343	0.357	0.386	7.46
44) 2-Methylnaph	0.647	0.639	0.670	0.679	0.638	0.655	0.603	0.751	0.660	6.55
45) 1-Methylnaph	0.656	0.648	0.682	0.732	0.689	0.657	0.732	0.661	0.682	4.95

Initial Calibration Summary

Page 3 of 3

Job Number: JC7897

Sample: EZ5278-ICC5278

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105714.D

Project: Sunoco - Marcus Hook Facility, PA

99)	Dibenz[a,h]a	0.992	1.028	1.119	1.144	1.035	0.987	0.987	1.057	1.044	5.76
100)	7,12-Dimethy	0.532	0.555	0.625	0.643	0.465	0.431	0.367		0.517	19.64
101)	Benzo[g,h,i]	0.981	1.004	1.135	1.210	1.053	0.973	1.003	1.148	1.063	8.40

(#) = Out of Range ### Number of calibration levels exceeded format ###

MZ5278.M

Tue Nov 03 11:24:49 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5278-ICV5278

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105719.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5278\z105719.D Vial: 10
 Acq On : 3 Nov 2015 4:47 am Operator: saraw
 Sample : icv5278-50 Inst : MSZ
 Misc : op88479,ez5278, Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Tue Nov 03 09:57:31 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	132	0.00
9 t	Phenol	2.102	1.682	20.0	100	0.00
12 t	2-Chlorophenol	1.492	1.273	14.7	111	0.00
19 t	2-Methylphenol	1.289	1.188	7.8	114	0.00
21 t	3&4-Methylphenol	1.409	1.281	9.1	119	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	128	0.00
29 t	2-Nitrophenol	0.208	0.190	8.7	106	0.00
30 t	2,4-Dimethylphenol	0.404	0.412	-2.0	114	0.00
31	Benzoic Acid	0.300	0.286	4.7	109	0.00
33 t	2,4-Dichlorophenol	0.308	0.282	8.4	112	0.00
34	2,6-Dichlorophenol	0.304	0.287	5.6	115	0.00
43 t	4-Chloro-3-methylphenol	0.386	0.360	6.7	112	-0.01
47 I	Acenaphthene-d10	1.000	1.000	0.0	133	0.00
49 t	2,4,6-Trichlorophenol	0.389	0.341	12.3	113	0.00
50 t	2,4,5-Trichlorophenol	0.394	0.361	8.4	118	-0.01
60 t	2,4-Dinitrophenol	50.000	40.598	18.8	90	0.00
61 t	4-Nitrophenol	0.249	0.226	9.2	111	-0.01
64	2,3,4,6-Tetrachlorophenol	0.372	0.303	18.5	104	0.00
69 I	Phenanthrene-d10	1.000	1.000	0.0	131	-0.01
70 t	4,6-Dinitro-2-methylpheno	0.141	0.118	16.3	99	-0.02
76 t	Pentachlorophenol	0.156	0.144	7.7	108	0.00

(#) = Out of Range
 z105283a.D MZ5278.M

SPCC's out = 0 CCC's out = 0
 Tue Nov 03 11:12:52 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5278-ICV5278

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105720.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5278\z105720.D Vial: 11
 Acq On : 3 Nov 2015 7:54 am Operator: saraw
 Sample : icv5278-50 Inst : MSZ
 Misc : op88479,ez5278, Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Tue Nov 03 09:57:31 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	105	0.00
3 t	Pyridine	1.500	1.625	-8.3	99	0.08
10 t	Aniline	2.317	2.230	3.8	90	0.00
16 t	Benzyl alcohol	0.908	0.915	-0.8	95	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	111	0.00
39 t	4-Chloroaniline	0.444	0.395	11.0	92	0.00
44 t	2-Methylnaphthalene	0.660	0.597	9.5	99	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	109	0.00
54 t	2-Nitroaniline	0.380	0.376	1.1	101	0.00
58 t	3-Nitroaniline	0.331	0.306	7.6	97	0.00
62 t	Dibenzofuran	1.752	1.538	12.2	99	0.00
68 t	4-Nitroaniline	0.334	0.295	11.7	98	-0.02
69 I	Phenanthrene-d10	1.000	1.000	0.0	107	-0.01
79 t	Carbazole	1.077	0.987	8.4	95	0.00
83 I	Chrysene-d12	1.000	1.000	0.0	102	-0.02
92 I	Perylene-d12	1.000	1.000	0.0	98	-0.01

(#) = Out of Range
 z105283a.D MZ5278.M

SPCC's out = 0 CCC's out = 0
 Tue Nov 03 11:12:55 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5278-ICV5278

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: Z105721.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5278\z105721.D Vial: 12
 Acq On : 3 Nov 2015 8:25 am Operator: saraw
 Sample : icv5278-50 Inst : MSZ
 Misc : op88479,ez5278, Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Tue Nov 03 09:57:31 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	117	0.00	4.69
4 t	N-Nitrosodimethylamine	0.876	0.840	4.1	98	0.00	2.54
11 t	bis(2-Chloroethyl)ether	1.303	1.261	3.2	107	0.00	4.49
14 t	1,3-Dichlorobenzene	1.580	1.405	11.1	100	0.00	4.65
15 t	1,4-Dichlorobenzene	1.628	1.429	12.2	99	0.00	4.70
17 t	1,2-Dichlorobenzene	1.450	1.341	7.5	103	0.00	4.82
20 t	2,2'-oxybis(1-Chloropropane)	0.491	0.409	16.7	99	0.00	4.89
22 t	n-Nitroso-di-n-propylamin	1.137	1.013	10.9	99	0.00	4.98
23 t	Hexachloroethane	0.527	0.506	4.0	104	0.00	5.06
24 I	Naphthalene-d8	1.000	1.000	0.0	111	0.00	5.61
26 t	Nitrobenzene	0.452	0.437	3.3	103	0.00	5.11
28 t	Isophorone	0.773	0.746	3.5	102	0.00	5.28
32 t	bis(2-Chloroethoxy)methane	0.428	0.425	0.7	107	0.00	5.43
36 t	1,2,4-Trichlorobenzene	0.351	0.330	6.0	104	0.00	5.57
38 t	Naphthalene	1.110	1.040	6.3	99	0.00	5.63
42 t	Hexachlorobutadiene	0.219	0.207	5.5	105	0.00	5.71
47 I	Acenaphthene-d10	1.000	1.000	0.0	109	0.00	7.01
48 t	Hexachlorocyclopentadiene	0.366	0.354	3.3	90	0.00	6.25
52 t	2-Chloronaphthalene	1.125	1.088	3.3	107	0.00	6.51
55 t	Dimethylphthalate	1.350	1.248	7.6	100	0.00	6.75
56 t	Acenaphthylene	1.957	1.633	16.6	89	0.00	6.87
57 t	2,6-Dinitrotoluene	0.299	0.271	9.4	93	0.00	6.80
59 t	Acenaphthene	1.226	1.144	6.7	103	0.00	7.04
		AvgRF	CCRF	% Dev			
63 t	2,4-Dinitrotoluene	0.425	0.362	14.8	89	0.00	7.20
65 t	Diethylphthalate	1.430	1.266	11.5	98	-0.01	7.46
66 t	Fluorene	1.416	1.287	9.1	98	-0.01	7.59
67 t	4-Chlorophenyl-phenylethane	0.728	0.652	10.4	96	0.00	7.59
69 I	Phenanthrene-d10	1.000	1.000	0.0	107	-0.01	8.87
71 t	n-Nitrosodiphenylamine	0.578	0.488	15.6	89	-0.01	7.73
72 t	1,2-Diphenylhydrazine	0.821	0.788	4.0	99	0.00	7.79
74 t	4-Bromophenyl-phenylether	0.251	0.230	8.4	98	0.00	8.22
75 t	Hexachlorobenzene	0.265	0.245	7.5	94	0.00	8.32
77 t	Phenanthrene	1.095	1.020	6.8	98	-0.01	8.90
78 t	Anthracene	1.118	1.014	9.3	95	0.00	8.98
80 t	Di-n-butylphthalate	1.268	1.196	5.7	93	-0.01	9.94
81 t	Fluoranthene	1.292	1.199	7.2	95	-0.01	11.02

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5278-ICV5278

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: Z105721.D

83	I	Chrysene-d12	1.000	1.000	0.0	100	-0.01	14.10
84	t	Pyrene	1.176	1.128	4.1	96	0.00	11.47
87	t	Butylbenzylphthalate	0.484	0.499	-3.1	94	-0.01	13.04
88	t	Benzo[a]anthracene	1.162	1.108	4.6	96	-0.01	14.07
90	t	Chrysene	1.063	1.011	4.9	94	-0.01	14.16
91	t	bis(2-Ethylhexyl)phthalat	0.670	0.672	-0.3	93	-0.01	14.44
92	I	Perylene-d12	1.000	1.000	0.0	101	-0.01	17.13
93	t	Di-n-octylphthalate	1.158	1.243	-7.3	91	-0.01	15.88
94	t	Benzo[b]fluoranthene	1.213	1.148	5.4	90	-0.01	16.38
95	t	Benzo[k]fluoranthene	1.121	1.094	2.4	94	-0.02	16.44
96	t	Benzo[a]pyrene	1.079	1.090	-1.0	96	-0.01	17.01
97	t	Indeno[1,2,3-cd]pyrene	1.027	1.014	1.3	93	-0.01	19.06
99	t	Dibenz[a,h]anthracene	1.044	1.041	0.3	94	-0.01	19.12
101	t	Benzo[g,h,i]perylene	1.063	1.004	5.6	90	-0.02	19.49

(#) = Out of Range
z105283a.D MZ5278.MSPCC's out = 0 CCC's out = 0
Tue Nov 03 11:12:57 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5278-ICV5278

Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: Z105722.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5278\z105722.D Vial: 13
 Acq On : 3 Nov 2015 8:56 am Operator: saraw
 Sample : icv5278-50 Inst : MSZ
 Misc : op88479,ez5278, Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Tue Nov 03 09:57:31 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	119	0.00
2	1,4-Dioxane	0.624	0.552	11.5	96	0.00
6 t	Indene	2.652	2.499	5.8	107	0.00
7 t	Cumene	4.014	3.683	8.2	102	0.00
13 t	Decane	1.075	0.968	10.0	105	0.00
18 t	Acetophenone	2.207	1.917	13.1	99	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	139	0.00
27 t	Quinoline	0.748	0.607	18.9	108	-0.01
40 t	2,3-Dichloroaniline	0.391	0.273	30.2#	94	0.00
41 t	Caprolactam	0.128	0.093	27.3	95	-0.03
45 t	1-Methylnaphthalene	0.682	0.523	23.3	106	0.00
46 t	Dimethylnaphthalene	0.683	0.545	20.2	106	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	116	0.00
53 t	Biphenyl	1.553	1.419	8.6	106	0.00
69 I	Phenanthrene-d10	1.000	1.000	0.0	110	-0.01
82 t	Octadecane	0.400	0.392	2.0	106	-0.01
83 I	Chrysene-d12	1.000	1.000	0.0	108	-0.02
92 I	Perylene-d12	1.000	1.000	0.0	106	-0.01
100 t	7,12-Dimethylbenz(a)anthr	0.517	0.540	-4.4	92	-0.02

(#) = Out of Range
 z105283a.D MZ5278.M

SPCC's out = 0 CCC's out = 0
 Tue Nov 03 11:12:59 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5278-ICV5278

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105723.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5278\z105723.D Vial: 14
 Acq On : 3 Nov 2015 9:27 am Operator: saraw
 Sample : icv5278-50 Inst : MSZ
 Misc : op88479,ez5278, Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Tue Nov 03 09:57:31 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
<hr/>						
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	126	0.00
5 S	2-Fluorophenol	1.455	1.366	6.1	106	0.00
8 S	Phenol-d5	1.876	1.712	8.7	104	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	125	0.00
25 S	Nitrobenzene-d5	0.456	0.444	2.6	109	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	123	0.00
51 S	2-Fluorobiphenyl	1.378	1.365	0.9	111	0.00
<hr/>						
69 I	Phenanthrene-d10	1.000	1.000	0.0	119	-0.01
73 S	2,4,6-Tribromophenol	0.125	0.114	8.8	99	-0.01
83 I	Chrysene-d12	1.000	1.000	0.0	112	-0.02
86 S	Terphenyl-d14	0.926	0.850	8.2	102	-0.01
92 I	Perylene-d12	1.000	1.000	0.0	111	-0.01
<hr/>						

(#) = Out of Range
 z105283a.D MZ5278.M

SPCC's out = 0 CCC's out = 0
 Tue Nov 03 11:13:01 2015 RTE

Initial Calibration Verification

Job Number: JC7897

Sample: EZ5278-ICV5278

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z105724.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5278\z105724.D Vial: 15
 Acq On : 3 Nov 2015 10:00 am Operator: saraw
 Sample : icv5278-50 Inst : MSZ
 Misc : op88479,ez5278, Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Tue Nov 03 09:57:31 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
83 I Chrysene-d12	1.000	1.000	0.0	122	-0.02	14.09
89 t 3,3'-Dichlorobenzidine	0.396	0.552	-39.4#	158	-0.01	14.12

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 z105283a.D MZ5278.M Tue Nov 03 11:15:09 2015 RTE

Continuing Calibration Summary

Job Number: JC7897

Sample: EZ5295-CC5278

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z106063.D

Project: Sunoco - Marcus Hook Facility, PA

94 t	Benzo[b]fluoranthene	1.213	1.328	-9.5	104	-0.05	16.36
95 t	Benzo[k]fluoranthene	1.121	1.167	-4.1	101	-0.05	16.42
96 t	Benzo[a]pyrene	1.079	1.148	-6.4	101	-0.05	16.99
97 t	Indeno[1,2,3-cd]pyrene	1.027	1.130	-10.0	104	-0.04	19.05
98 t	Dibenz(a,h)acridine	0.972	1.070	-10.1	102	-0.05	18.68
99 t	Dibenz[a,h]anthracene	1.044	1.142	-9.4	104	-0.04	19.10
100 t	7,12-Dimethylbenz(a)anthr	0.517	0.606	-17.2	99	-0.05	16.37
101 t	Benzo[g,h,i]perylene	1.063	1.084	-2.0	97	-0.04	19.48

(#) = Out of Range
z106041.D MZ5278.M

SPCC's out = 0 CCC's out = 0
Mon Nov 16 13:36:04 2015 RTE

Continuing Calibration Summary

Job Number: JC7897

Sample: EZ5295-CC5255

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: Z106064.D

Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5295\z106064.D Vial: 3
 Acq On : 13 Nov 2015 12:45 pm Operator: brittamp
 Sample : cc5255-50 Inst : MSZ
 Misc : op88678,ez5295,30.7,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
 Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 Last Update : Mon Nov 16 08:16:11 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	97	0.00	4.67
103	Benzaldehyde	1.097	0.789	28.1#	67	-0.21	4.35
104	Phenanthrene-d10a	1.000	1.000	0.0	97	0.00	8.83
105	Atrazine	0.113	0.122	-8.0	109	0.05	8.45
106	Chrysene-d12a	1.000	1.000	0.0	112	-0.01	14.06
107	Benzidine	0.586	0.422	28.0#	80	0.00	11.33
108	Acenaphthene-d10a	1.000	1.000	0.0	90	0.00	6.99
109	1,2,4,5-Tetrachlorobenzen	0.499	0.555	-11.2	105	0.04	6.23
110 I	Naphthalene-d8a	1.000	1.000	0.0	90	0.00	5.59
111	Hydroquinone	0.349	0.279	20.1#	74	0.03	5.91

(#) = Out of Range
 z106041.D MZ5278.M

SPCC's out = 0 CCC's out = 0
 Mon Nov 16 08:17:23 2015 RTE

8.7.28

8



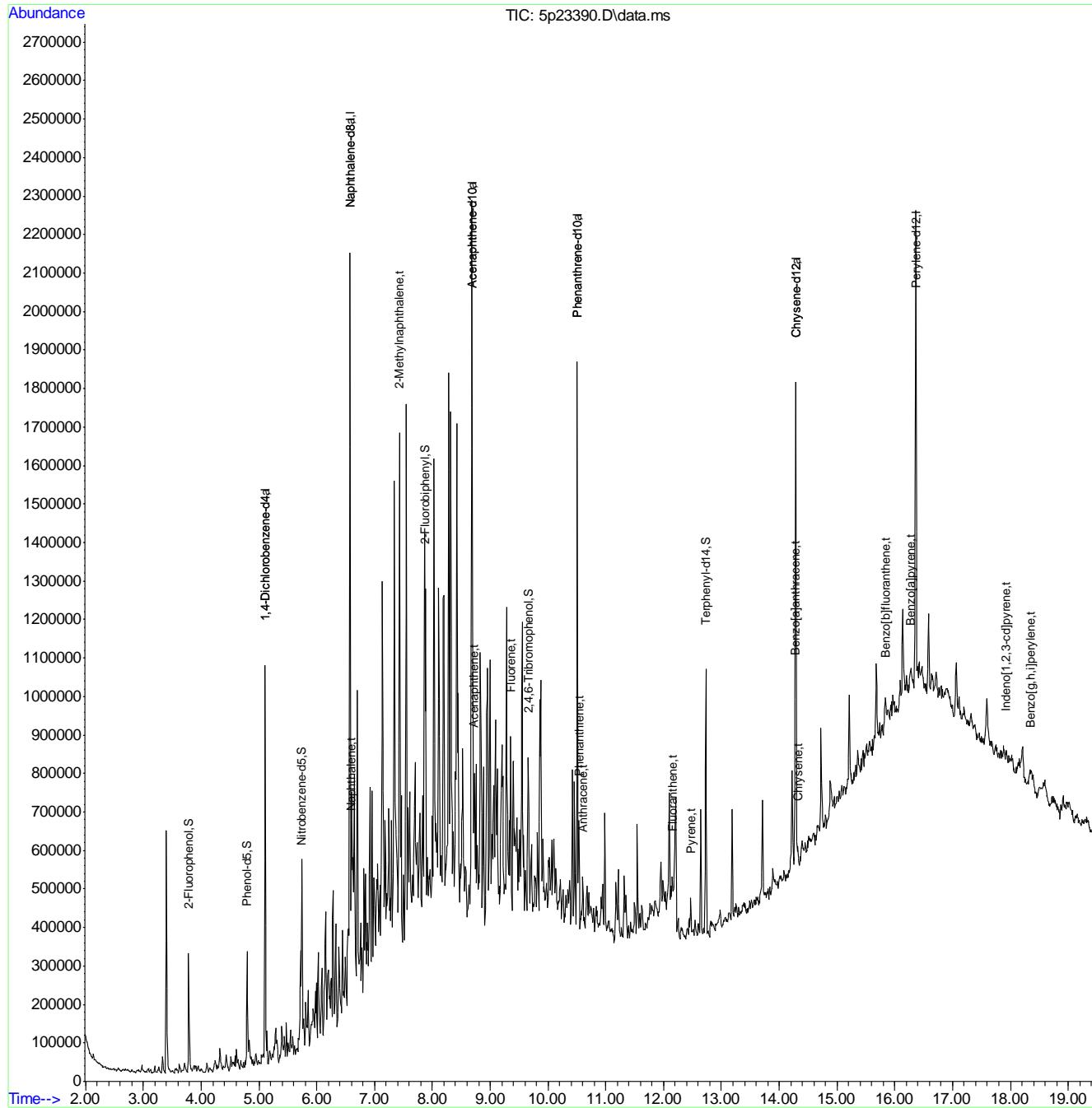
GC/MS Semi-volatiles

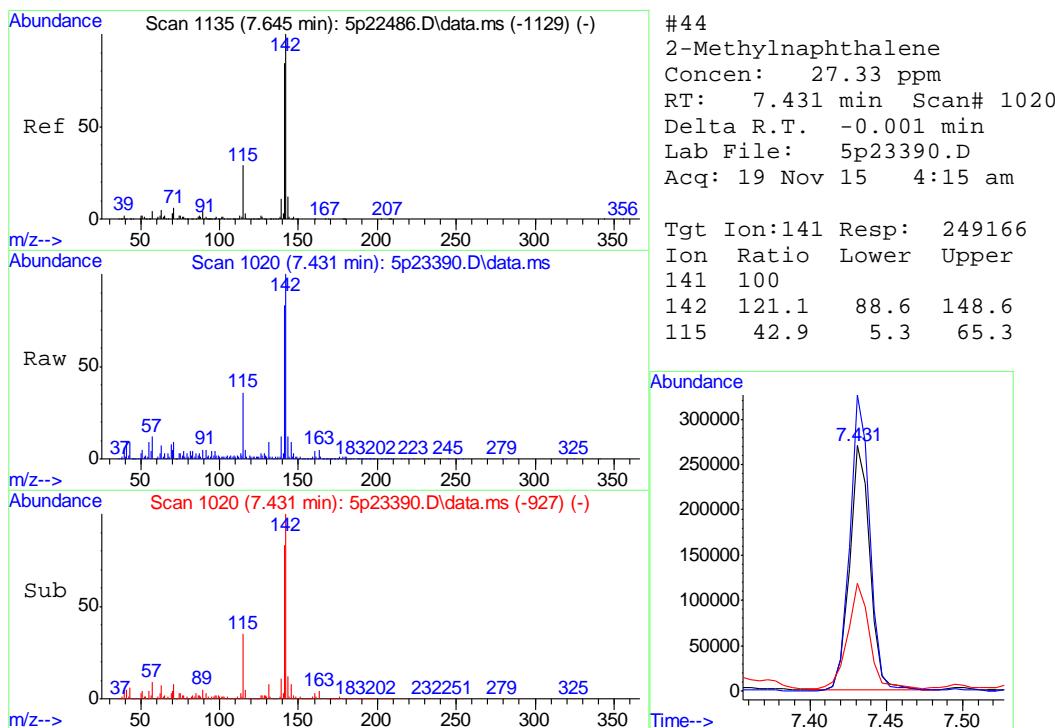
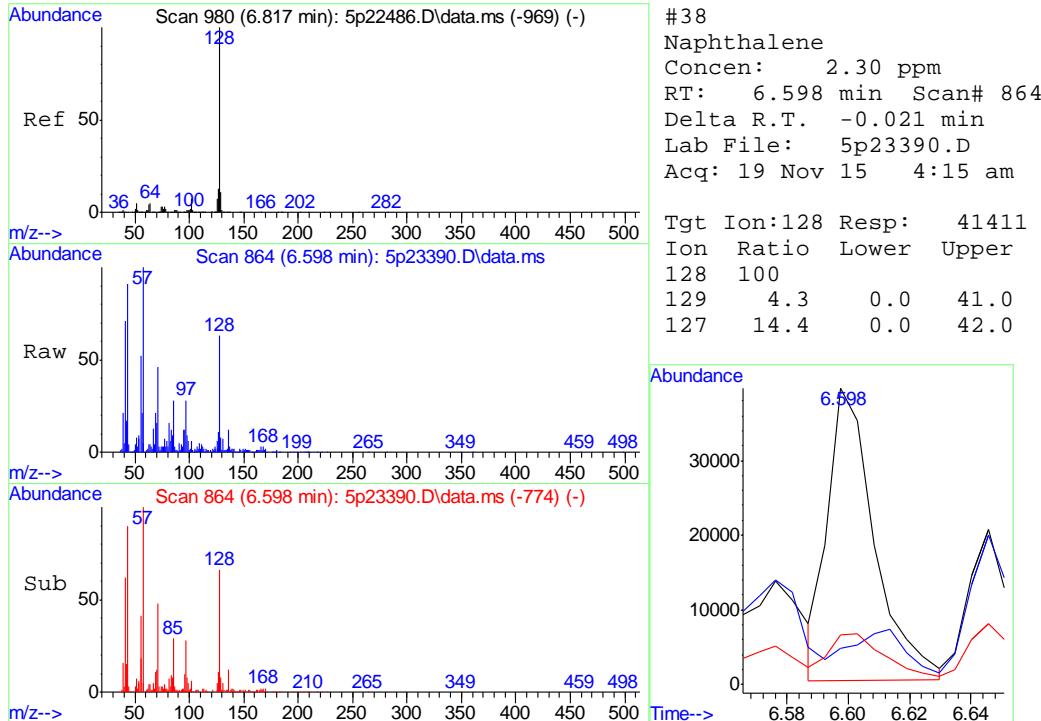
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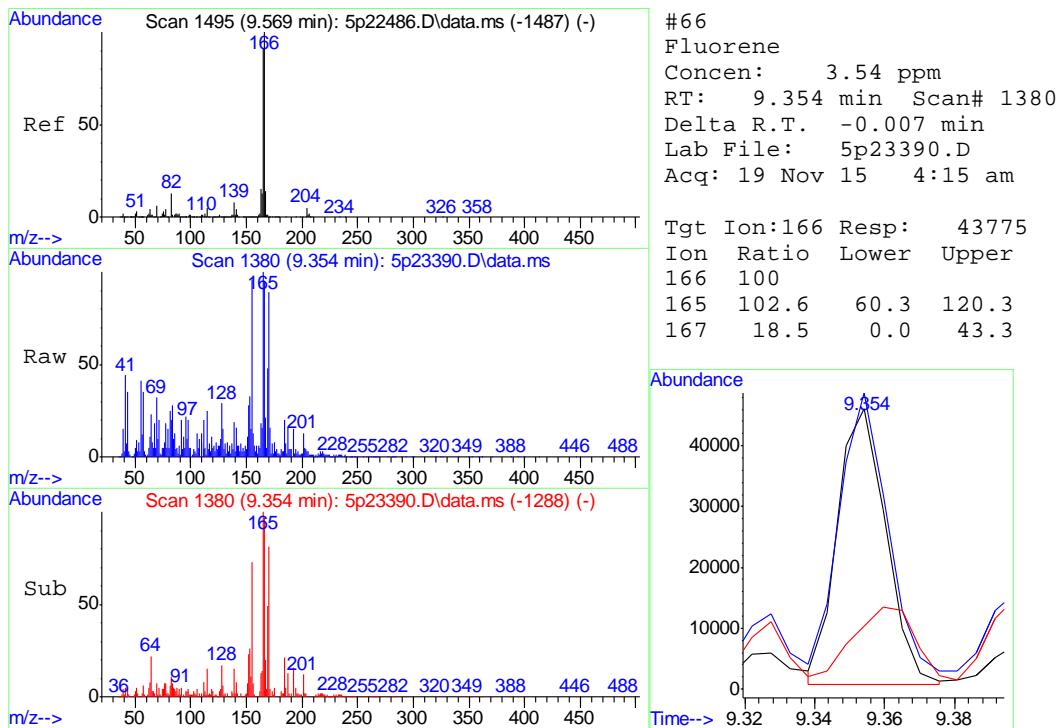
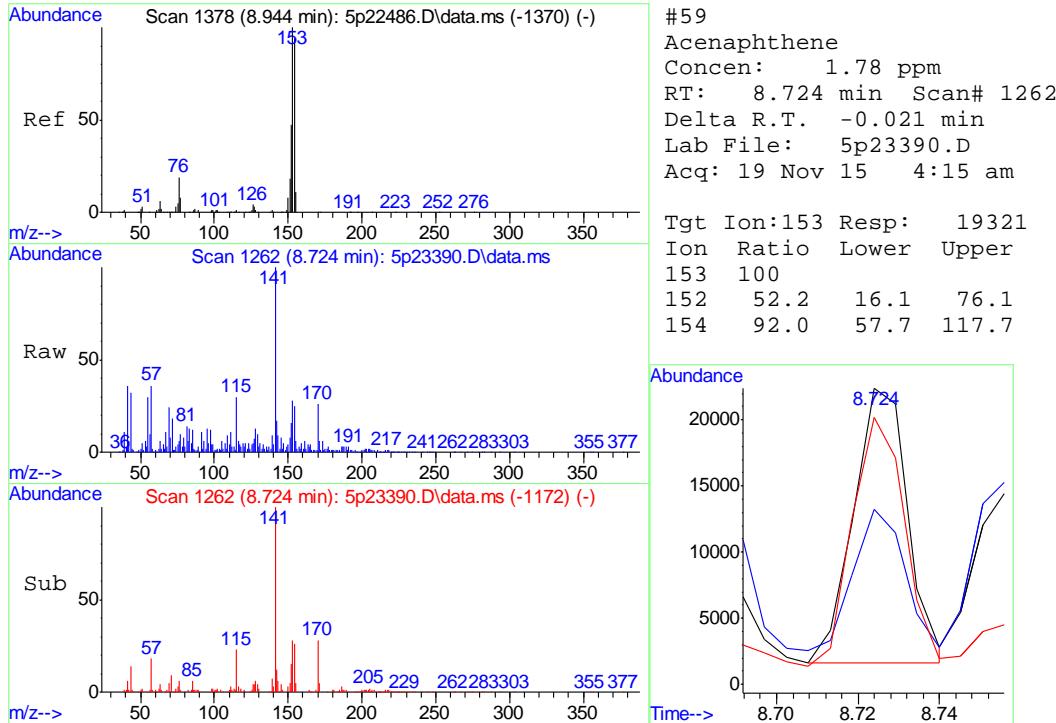
Quantitation Report (QT Reviewed)

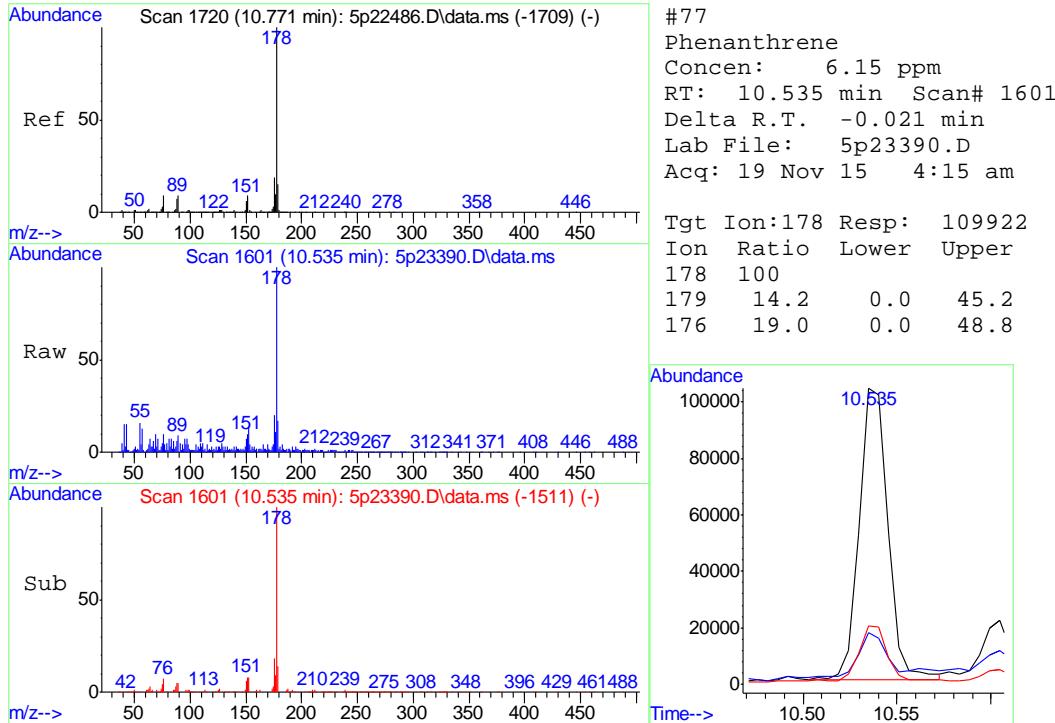
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 Data File : 5p23390.D
 Acq On : 19 Nov 15 4:15 am
 Operator : saraw
 Sample : jc7897-1
 Misc : op88822,e5p1190,30.1,,,1,2
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Nov 19 12:06:32 2015
 Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
 Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 QLast Update : Wed Nov 18 14:22:41 2015
 Response via : Initial Calibration



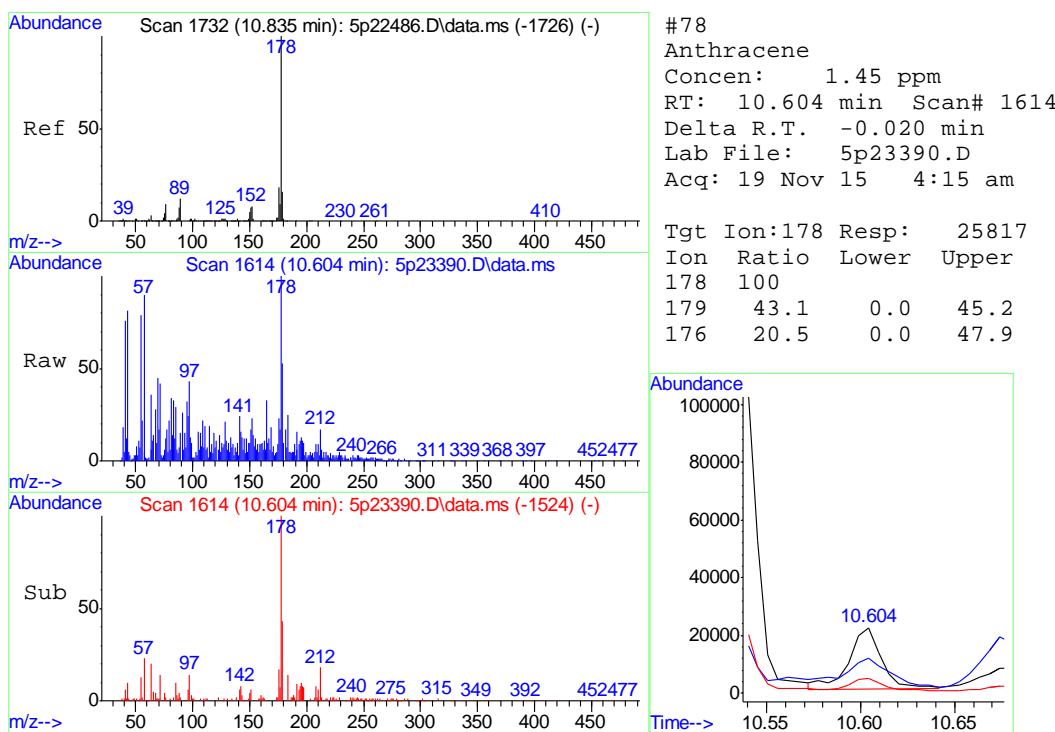


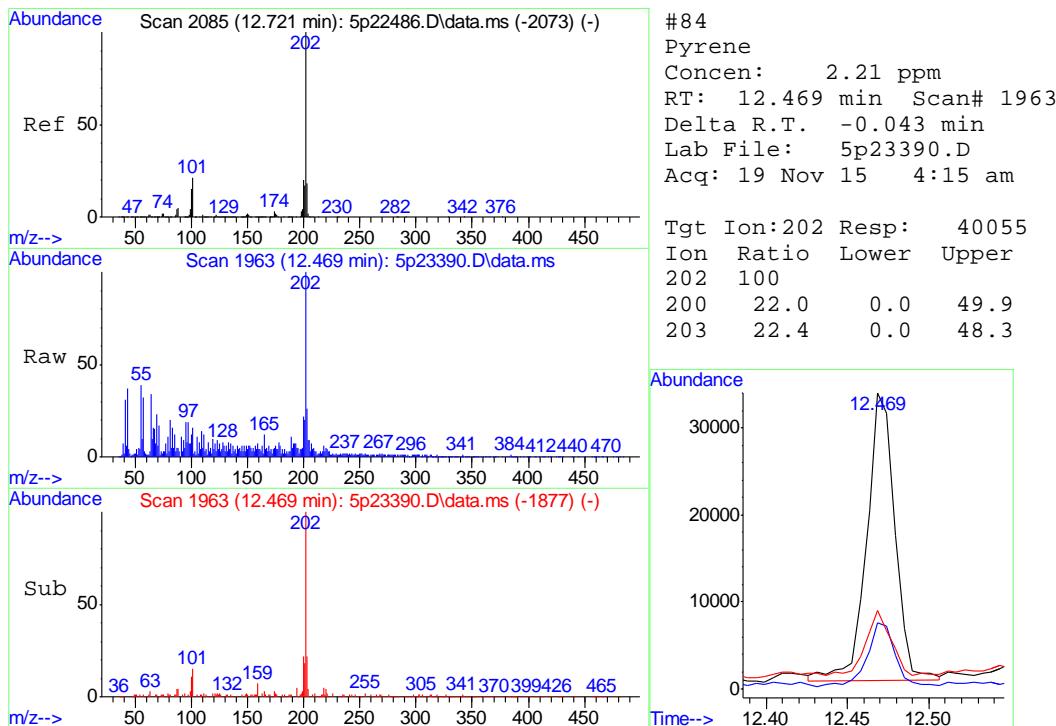
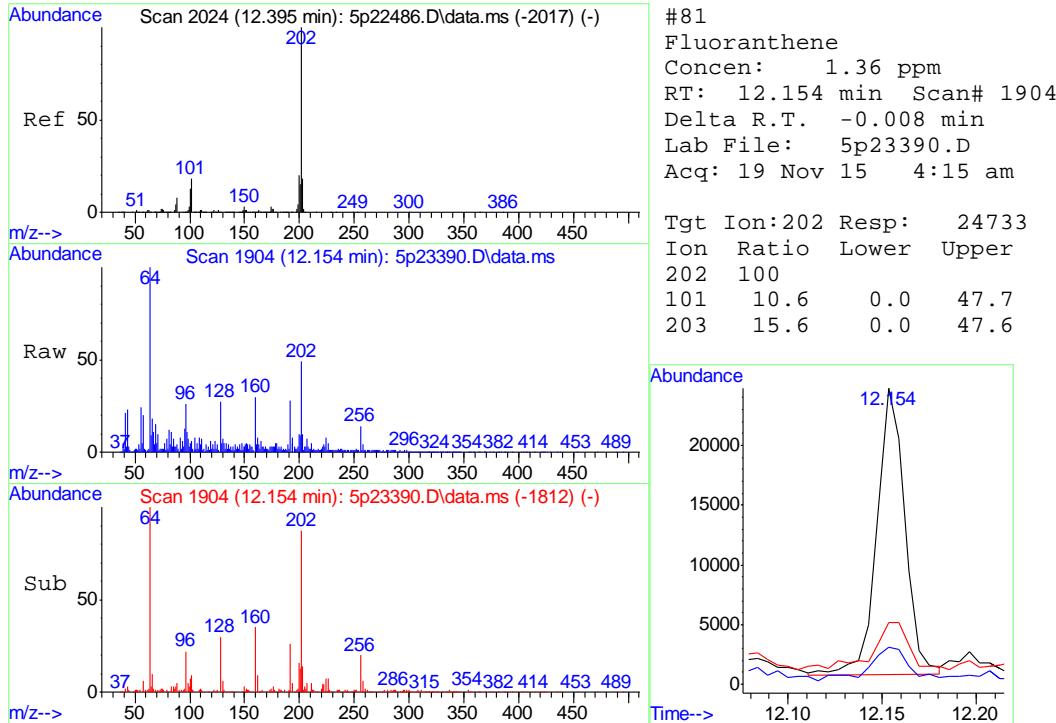


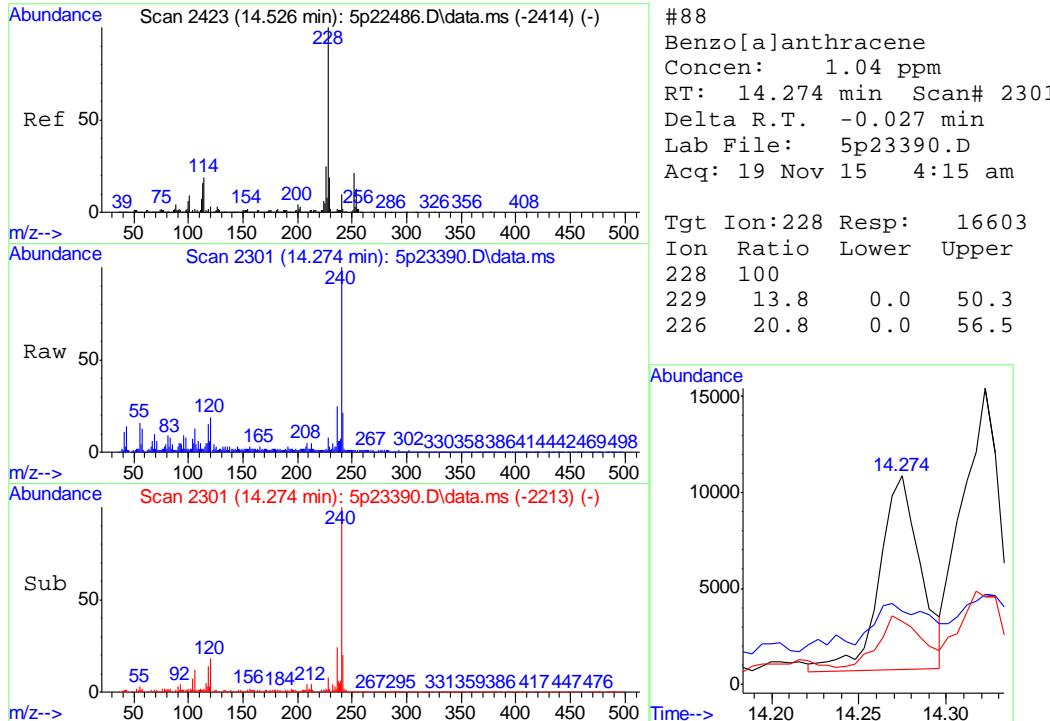


9.1.1

6

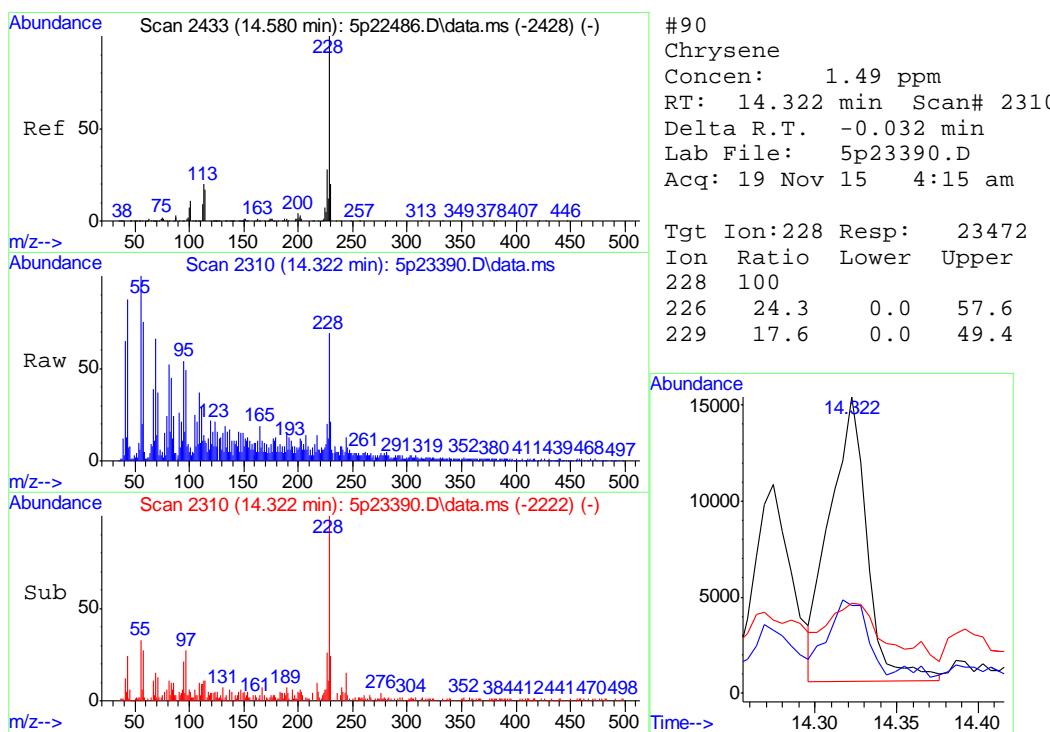


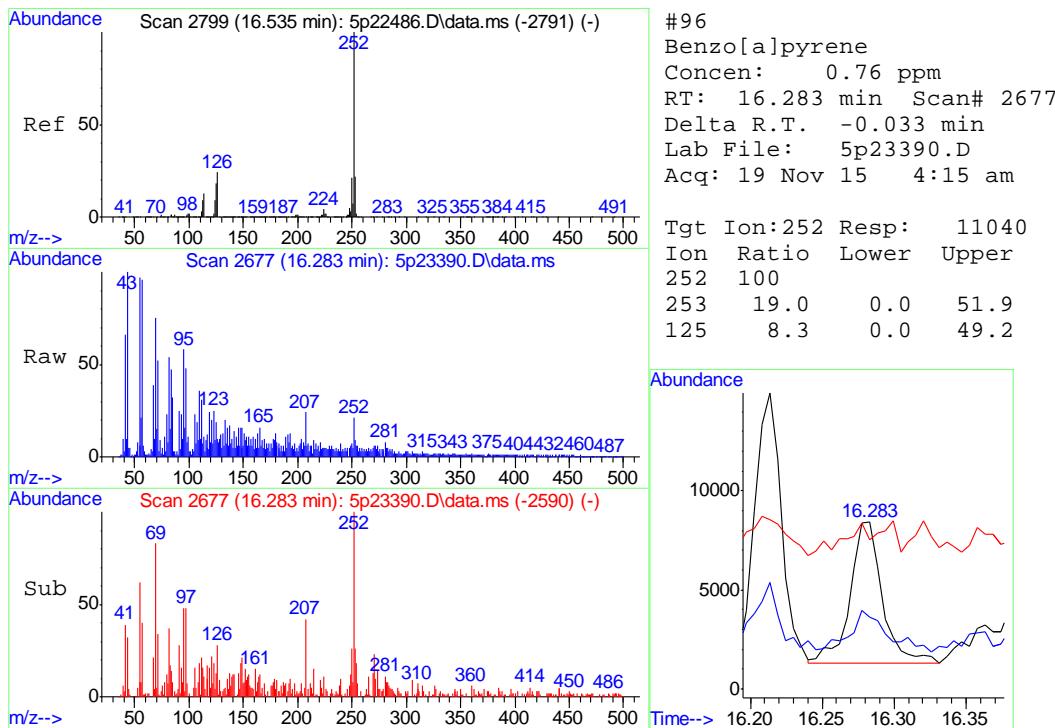
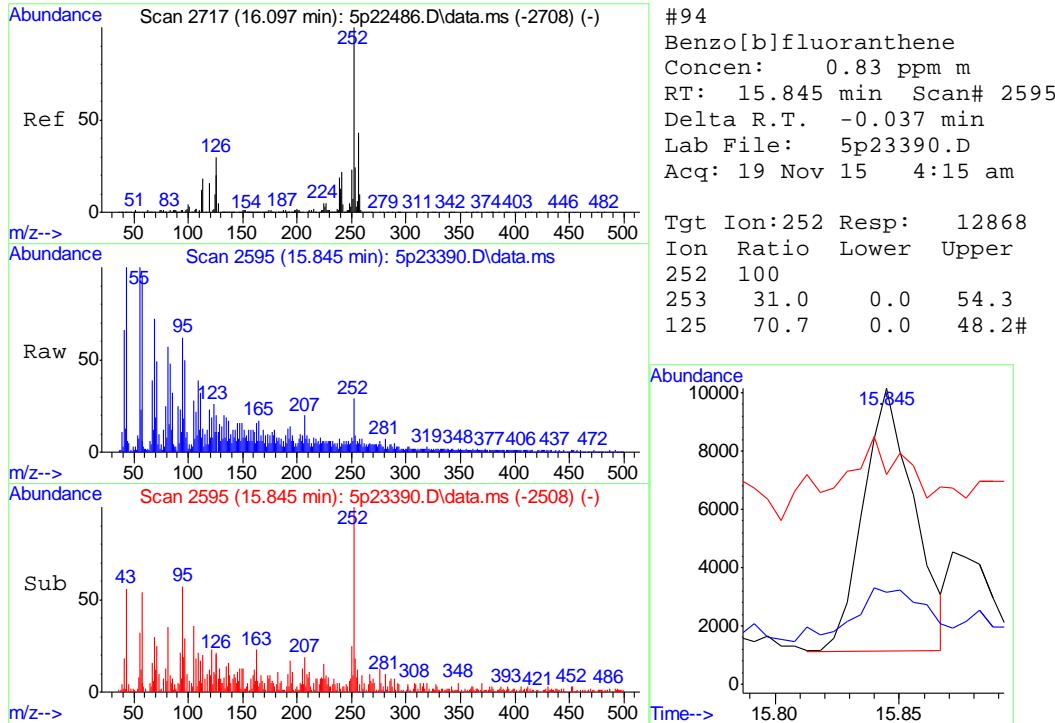


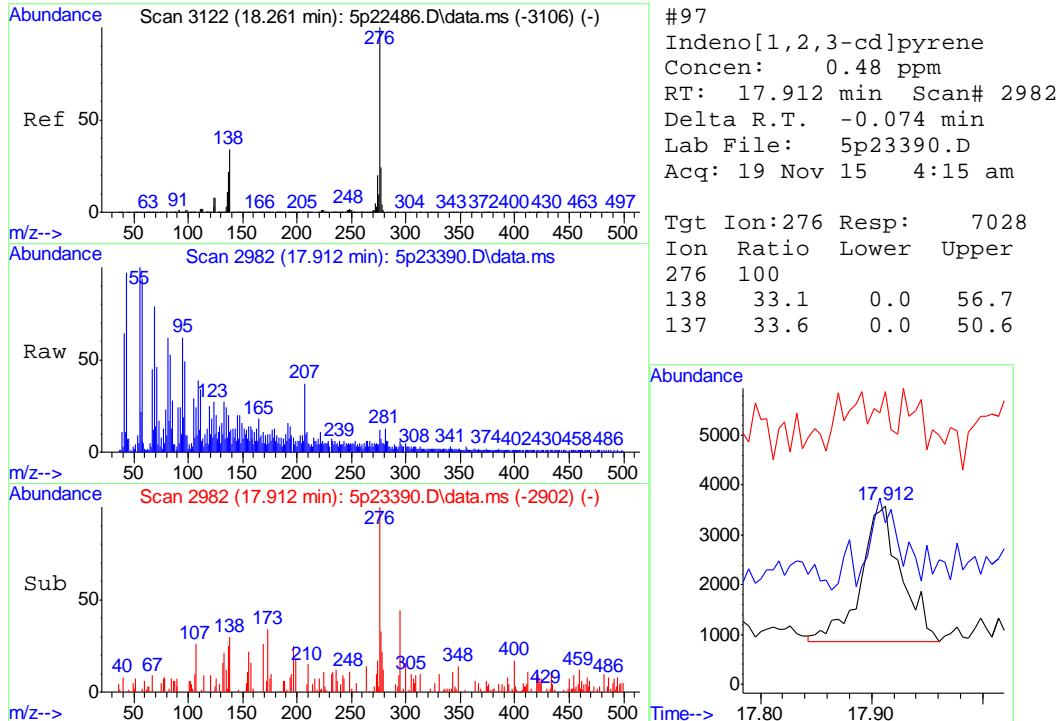


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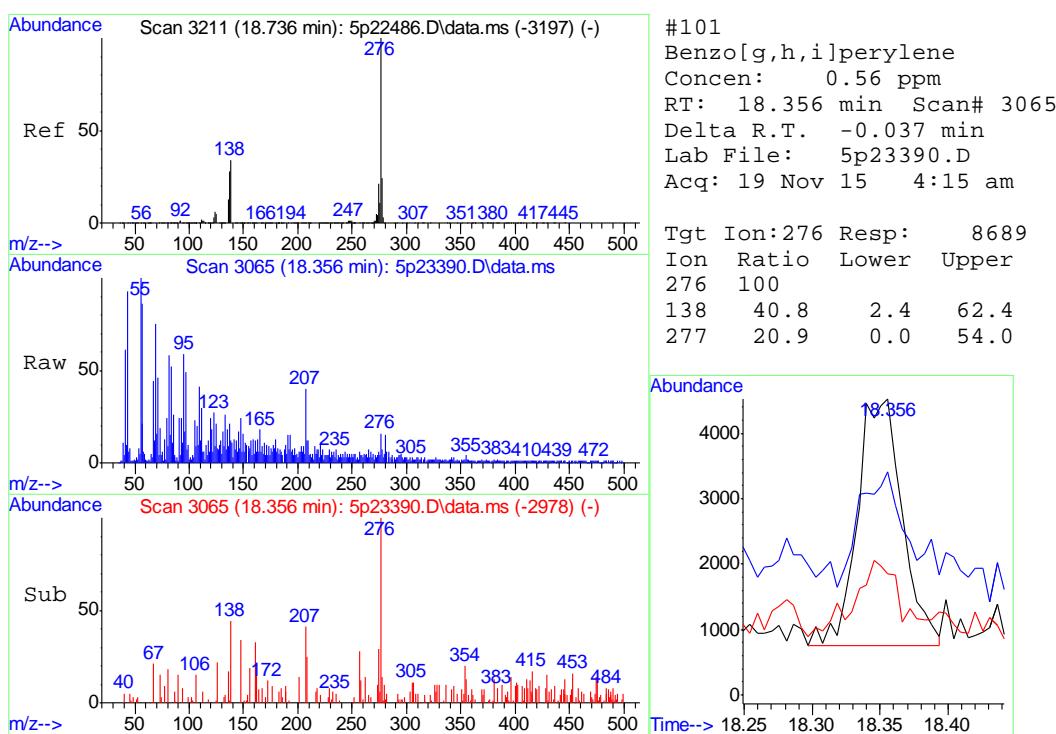






9.1.1

6



Nina Pandya
 11/19/15 12:37

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\EZ5295\
 Data File : z106084.D
 Acq On : 13 Nov 2015 11:17 pm
 Operator : brittanj
 Sample : jc7897-2
 Misc : op88822,ez5295,31.9
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Nov 19 10:00:40 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MZ5278.M
 Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 QLast Update : Mon Nov 16 09:27:37 2015
 Response via : Initial Calibration

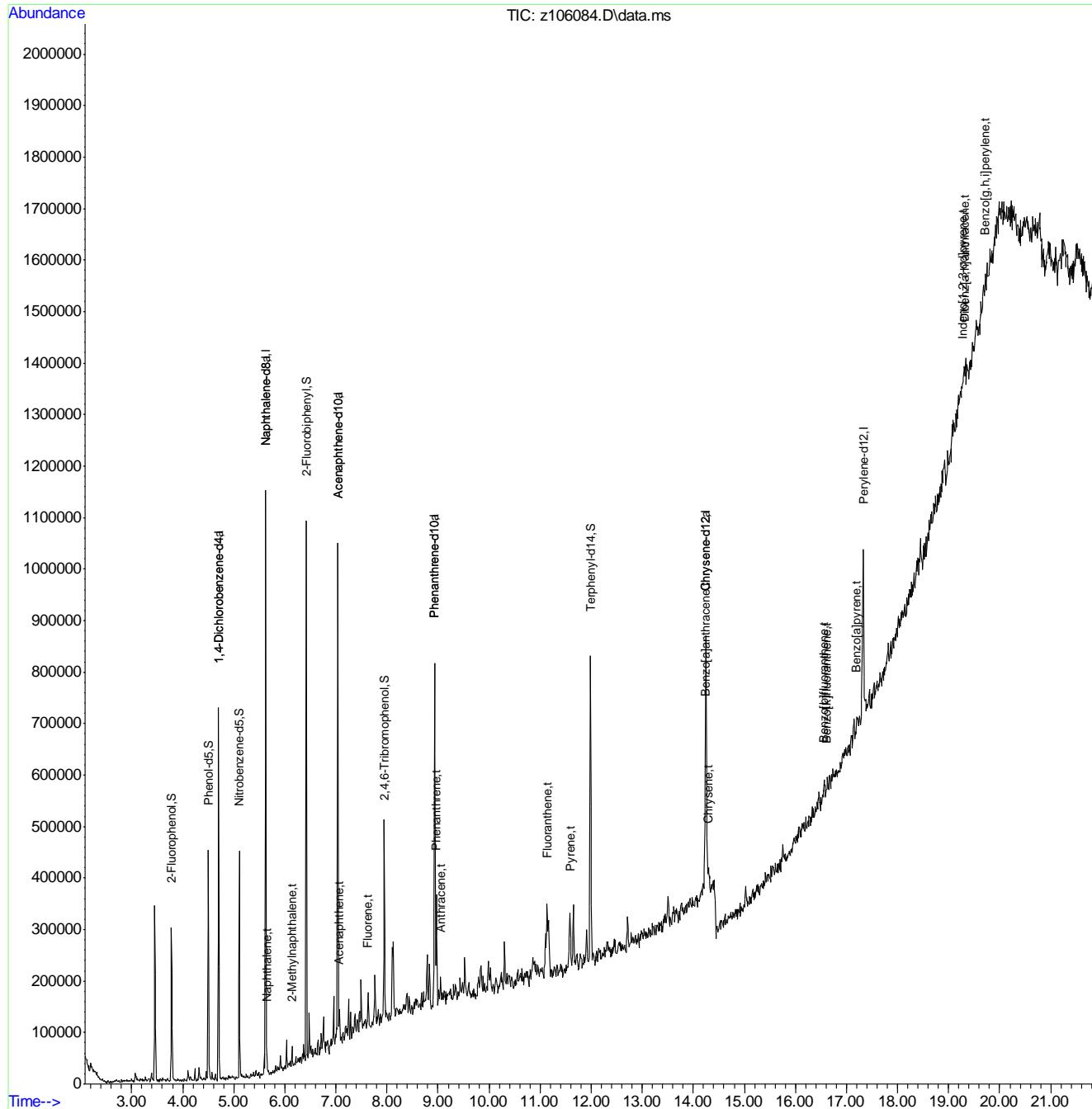
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.699	152	83502	40.00	ppm	0.00
24) Naphthalene-d8	5.624	136	323063	40.00	ppm	0.00
47) Acenaphthene-d10	7.039	164	195475	40.00	ppm	0.00
69) Phenanthrene-d10	8.936	188	293582	40.00	ppm	0.00
83) Chrysene-d12	14.246	240	262767	40.00	ppm	0.00
92) Perylene-d12	17.328	264	176728	40.00	ppm	0.00
102) 1,4-Dichlorobenzene-d4a	4.699	152	83502	40.00	ppm	0.00
104) Phenanthrene-d10a	8.936	188	293582	40.00	ppm	0.00
106) Chrysene-d12a	14.246	240	262767	40.00	ppm	0.00
108) Acenaphthene-d10a	7.039	164	195475	40.00	ppm	0.00
110) Naphthalene-d8a	5.624	136	323063	40.00	ppm	0.00
System Monitoring Compounds						
5) 2-Fluorophenol	3.781	112	67092	22.09	ppm	-0.02
Spiked Amount 50.000			Recovery =	44.18%		
8) Phenol-d5	4.502	99	92434	23.61	ppm	-0.02
Spiked Amount 50.000			Recovery =	47.22%		
25) Nitrobenzene-d5	5.105	82	94136	25.53	ppm	0.00
Spiked Amount 50.000			Recovery =	51.06%		
51) 2-Fluorobiphenyl	6.420	172	251321	37.31	ppm	0.00
Spiked Amount 50.000			Recovery =	74.62%		
73) 2,4,6-Tribromophenol	7.953	330	40706	44.50	ppm	0.00
Spiked Amount 50.000			Recovery =	89.00%		
86) Terphenyl-d14	11.986	244	255209	41.97	ppm	-0.01
Spiked Amount 50.000			Recovery =	83.94%		
Target Compounds						
				Qvalue		
38) Naphthalene	5.640	128	10177	1.14	ppm	95
44) 2-Methylnaphthalene	6.142	141	7052	1.32	ppm	91
59) Acenaphthene	7.066	153	12026	2.01	ppm	93
66) Fluorene	7.632	166	13611	1.97	ppm	80
77) Phenanthrene	8.973	178	97055	12.08	ppm	97
78) Anthracene	9.053	178	26392m	3.22	ppm	
81) Fluoranthene	11.137	202	67820	7.15	ppm	92
84) Pyrene	11.586	202	60556m	7.84	ppm	
88) Benzo[a]anthracene	14.235	228	26298m	3.44	ppm	
90) Chrysene	14.299	228	25609	3.67	ppm	88
94) Benzo[b]fluoranthene	16.559	252	15717	2.93	ppm	85
95) Benzo[k]fluoranthene	16.613	252	4937m	1.00	ppm	
96) Benzo[a]pyrene	17.200	252	15718	3.30	ppm	68
97) Indeno[1,2,3-cd]pyrene	19.273	276	3336	0.74	ppm	58
99) Dibenz[a,h]anthracene	19.310	278	5331	1.16	ppm	# 35
101) Benzo[g,h,i]perylene	19.711	276	8475m	1.80	ppm	

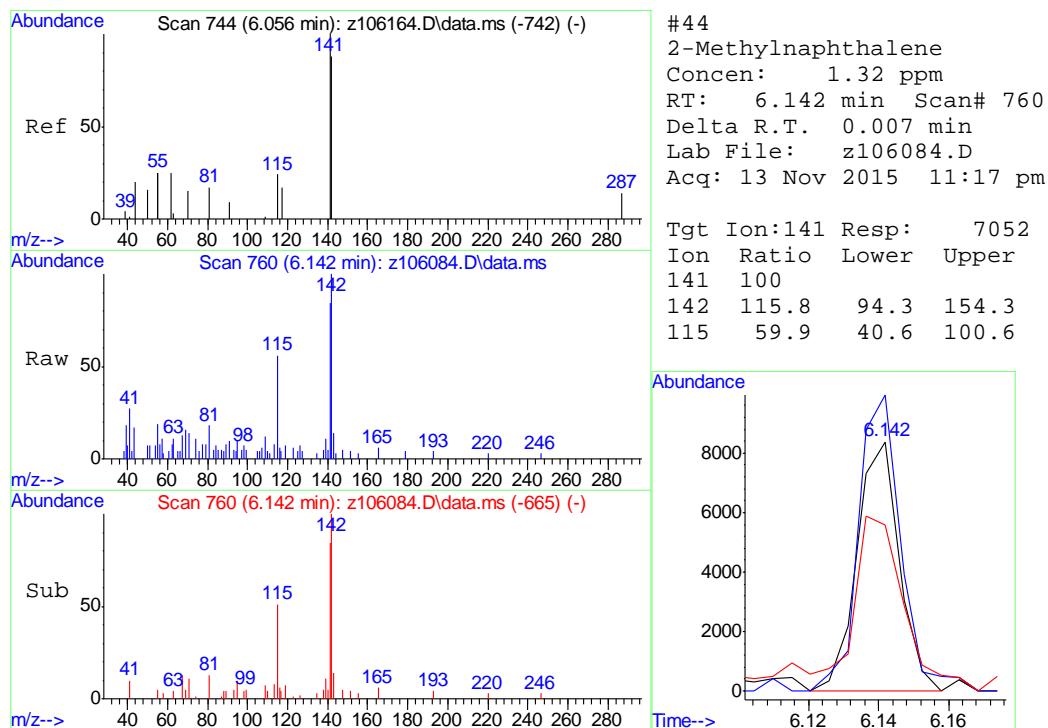
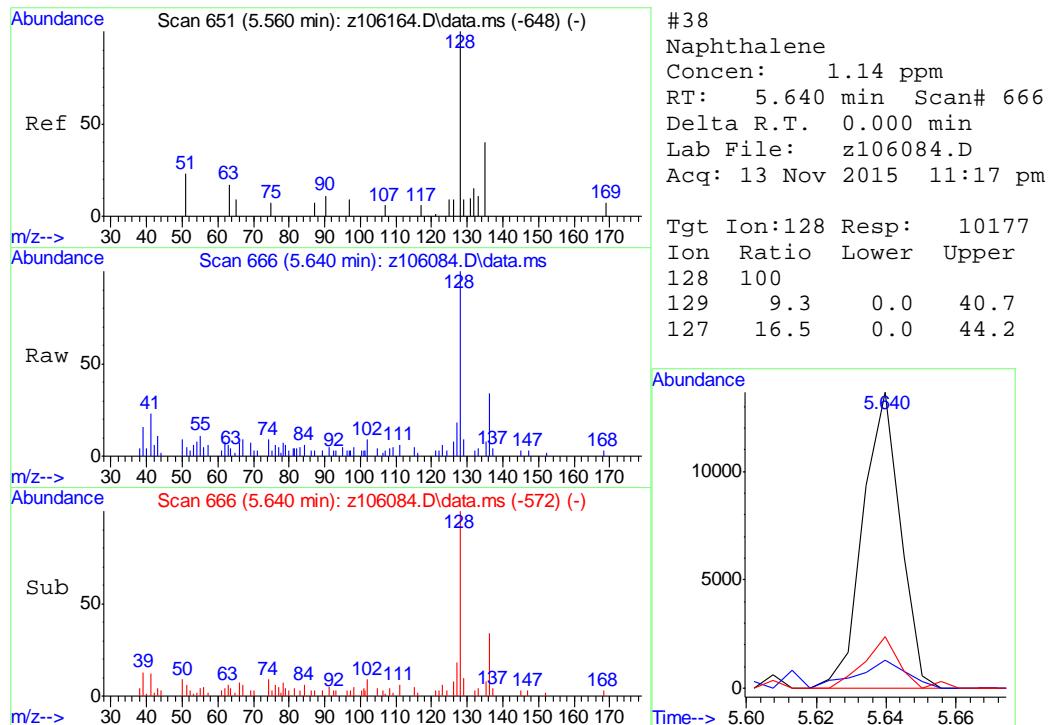
(#) = qualifier out of range (m) = manual integration (+) = signals summed

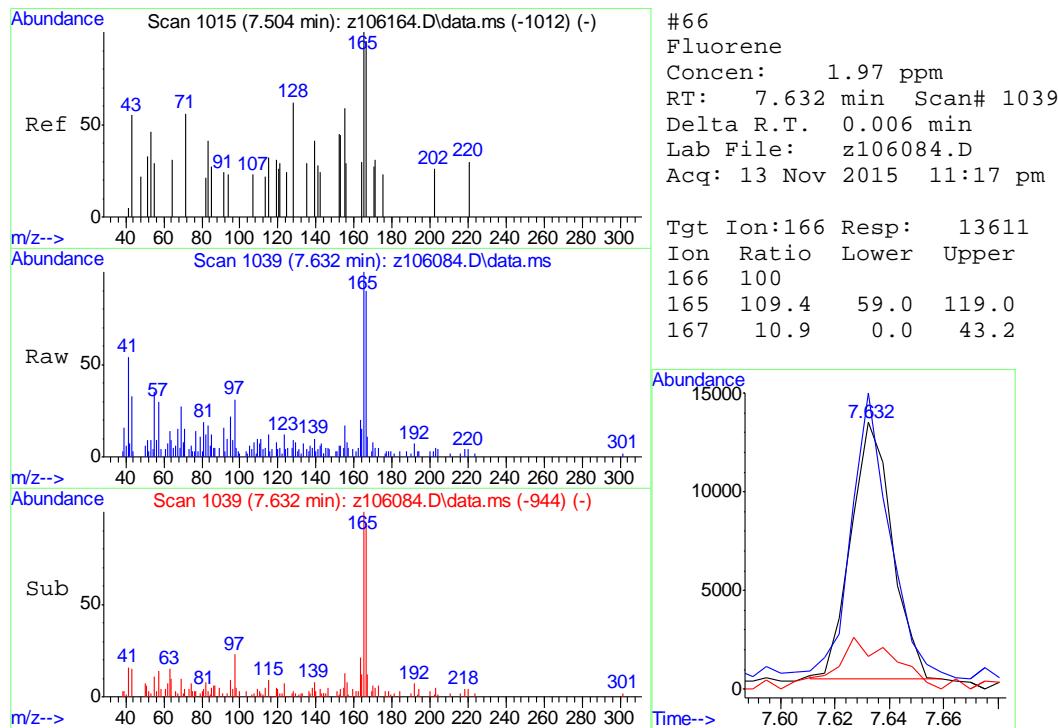
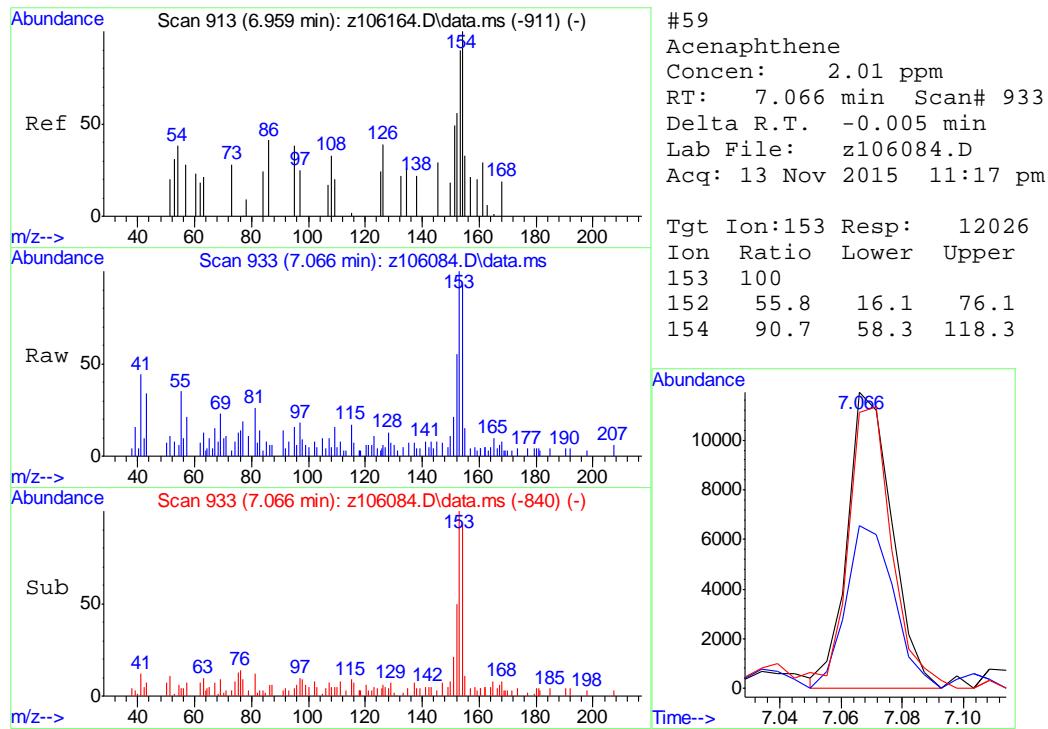
Quantitation Report (QT Reviewed)

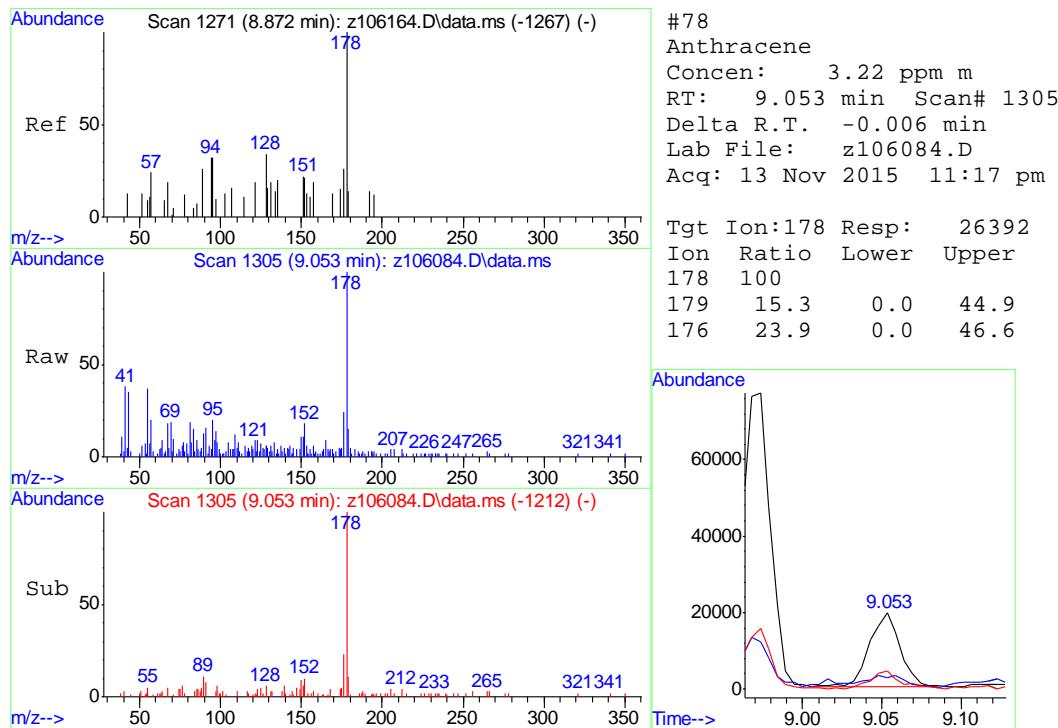
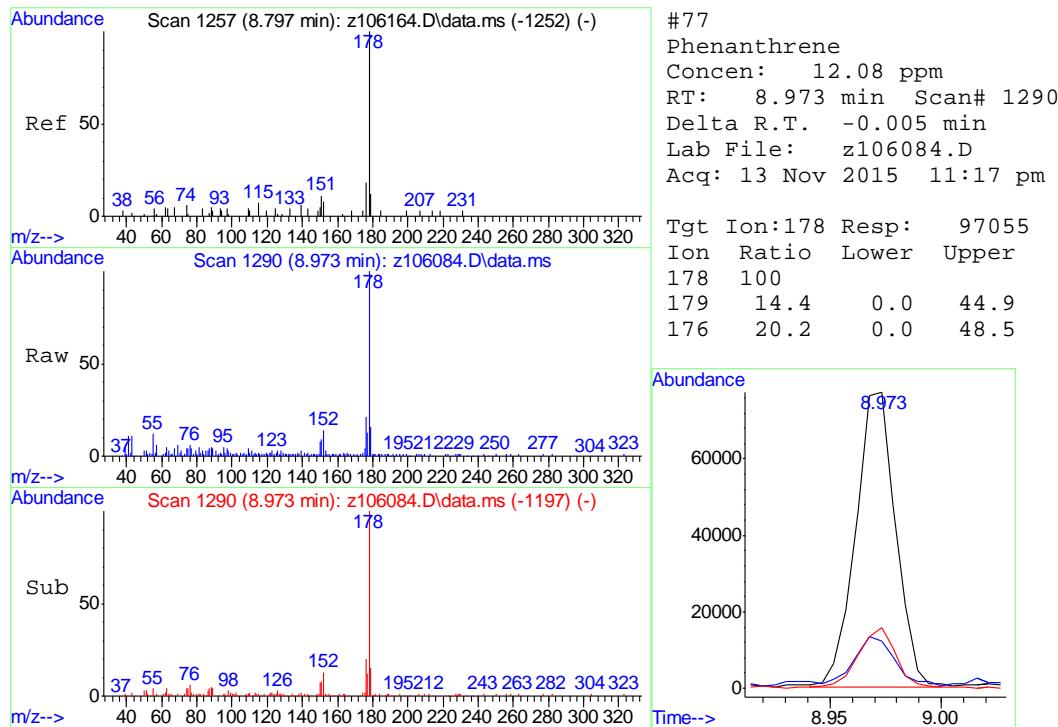
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 Data File : z106084.D
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 Operator : brittany
 Sample : jc7897-2
 Misc : op88822,ez5295,31.9
 ALS Vial : 23 Sample Multiplier: 1

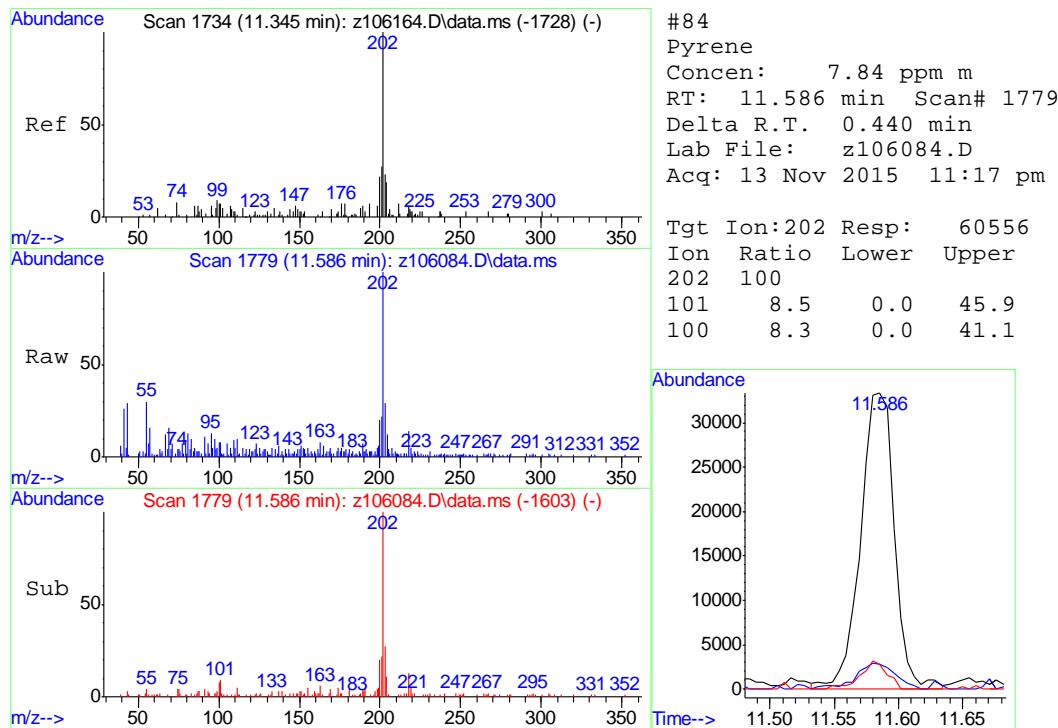
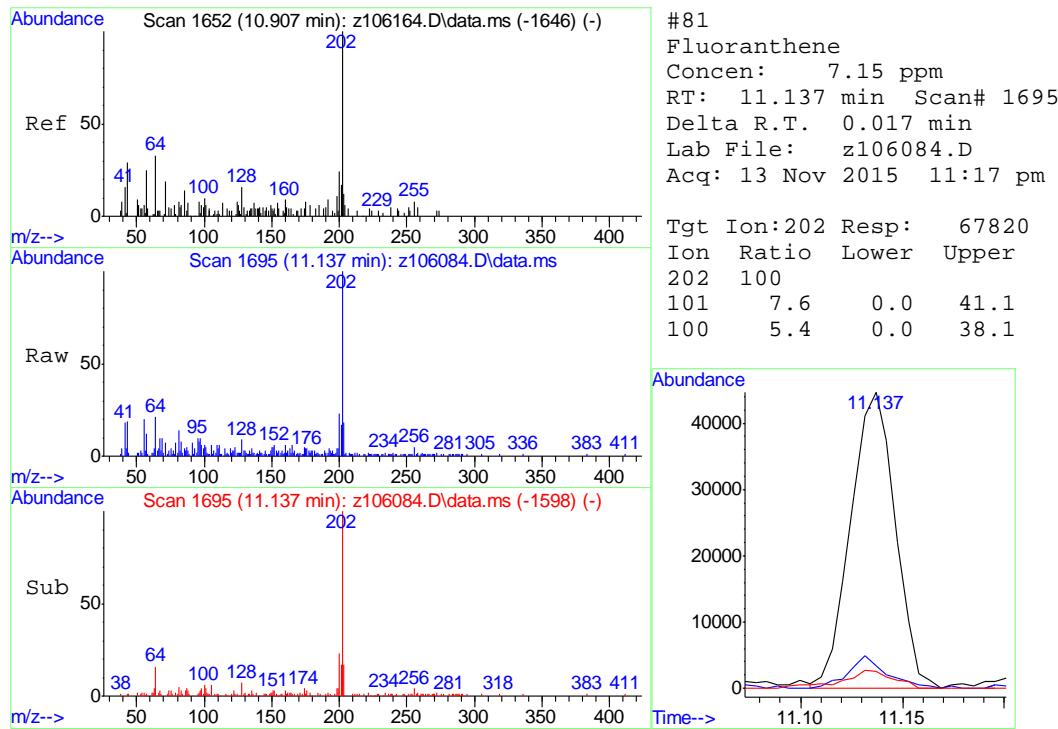
Quant Time: Nov 19 10:00:40 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MZ5278.M
 Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 QLast Update : Mon Nov 16 09:27:37 2015
 Response via : Initial Calibration

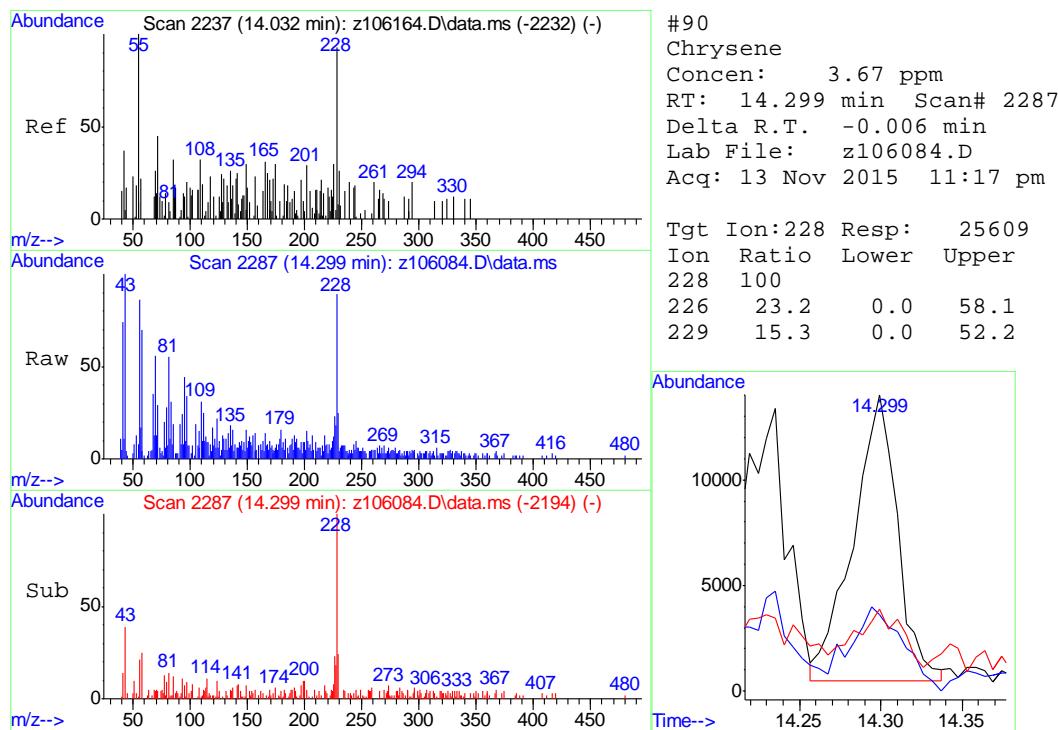
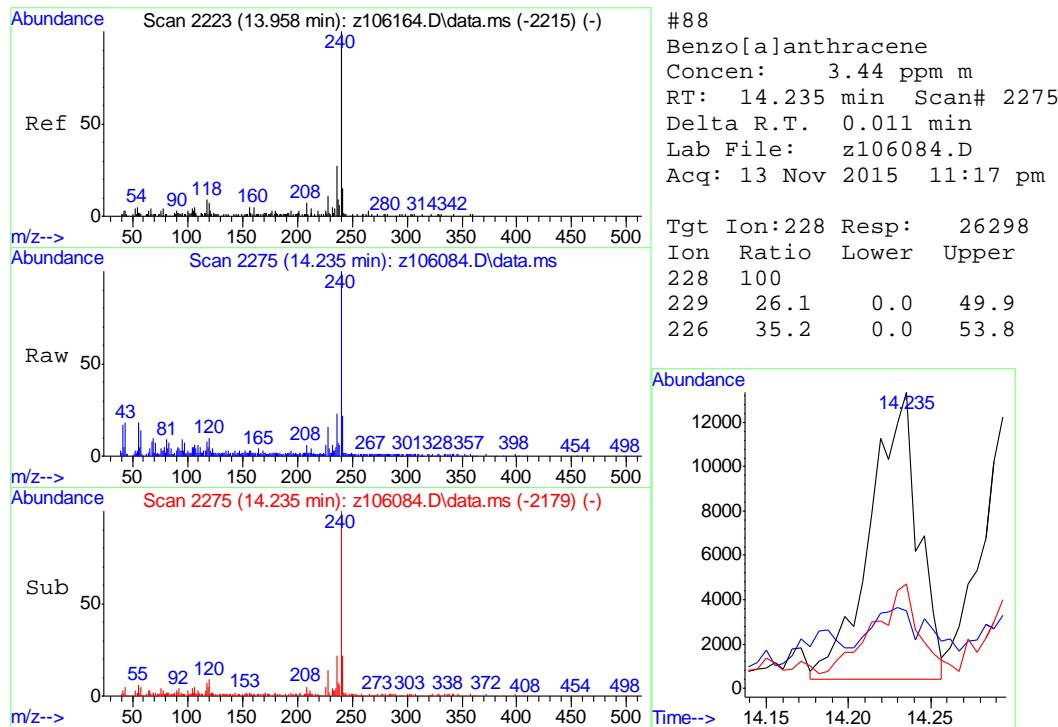


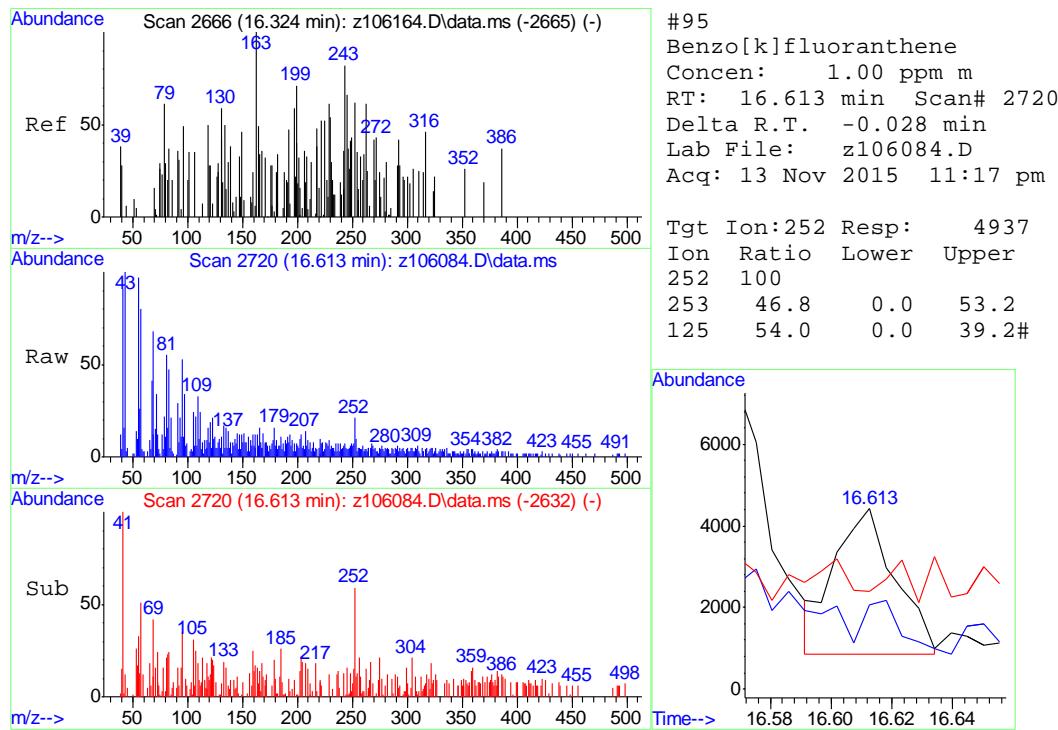
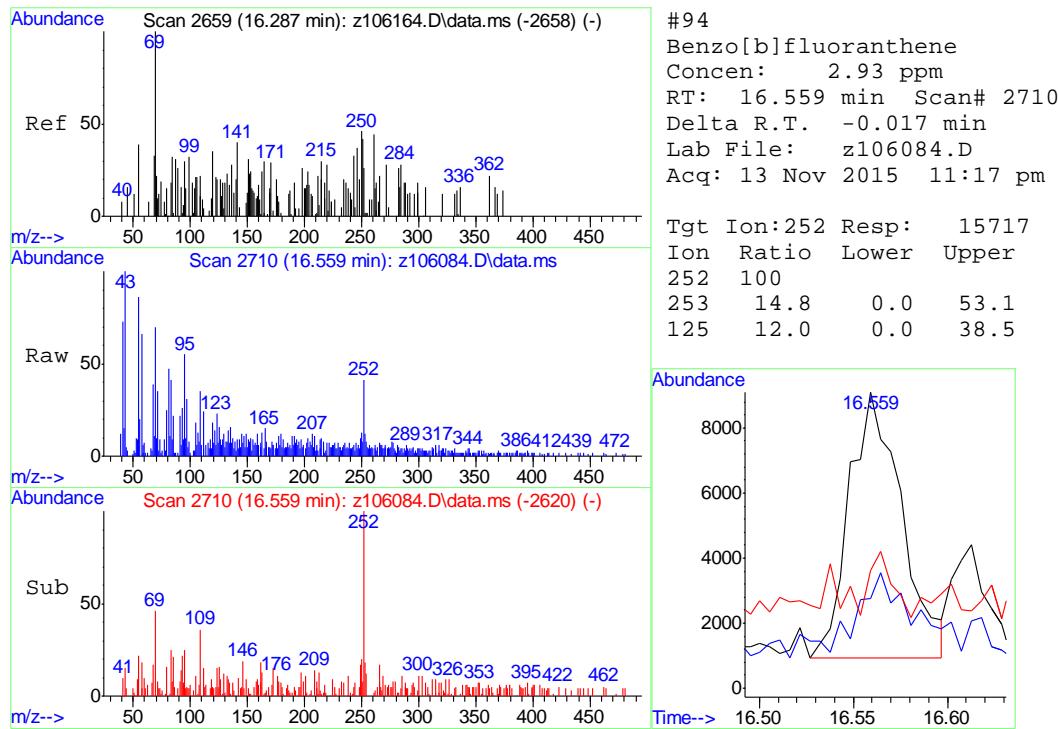


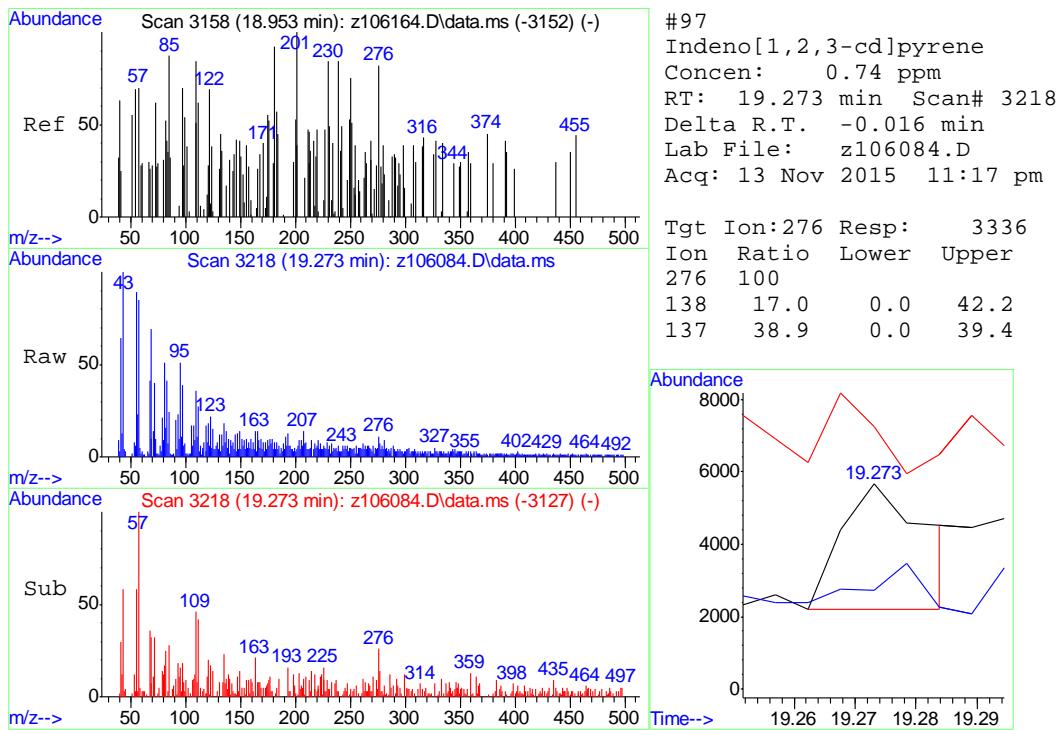
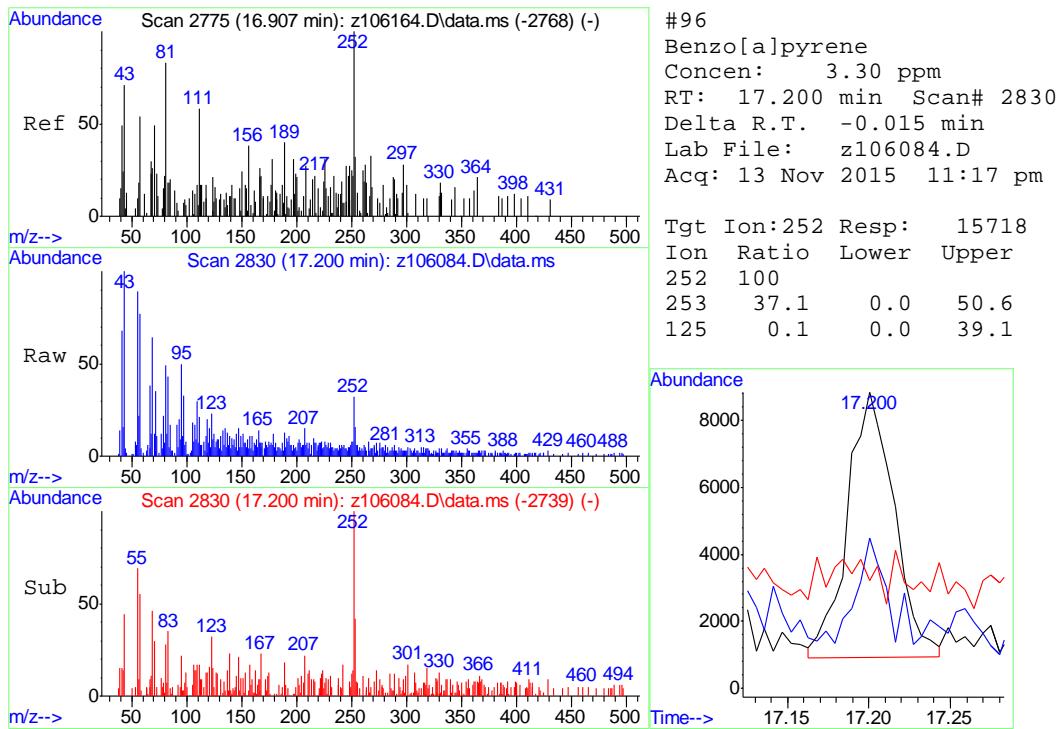


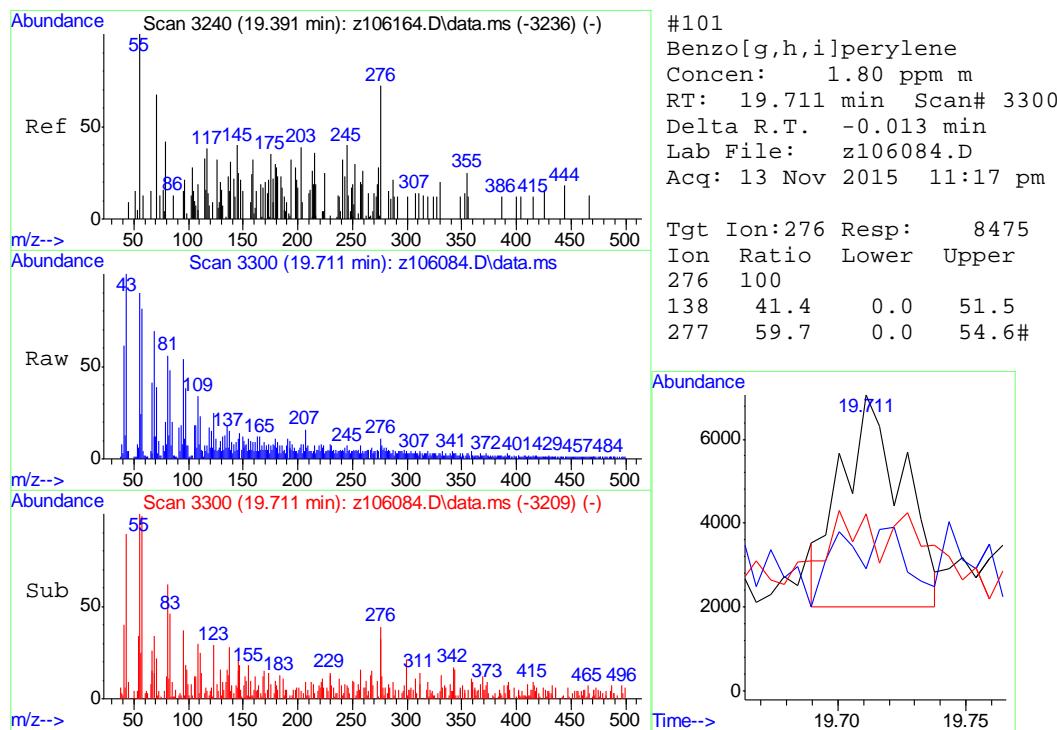
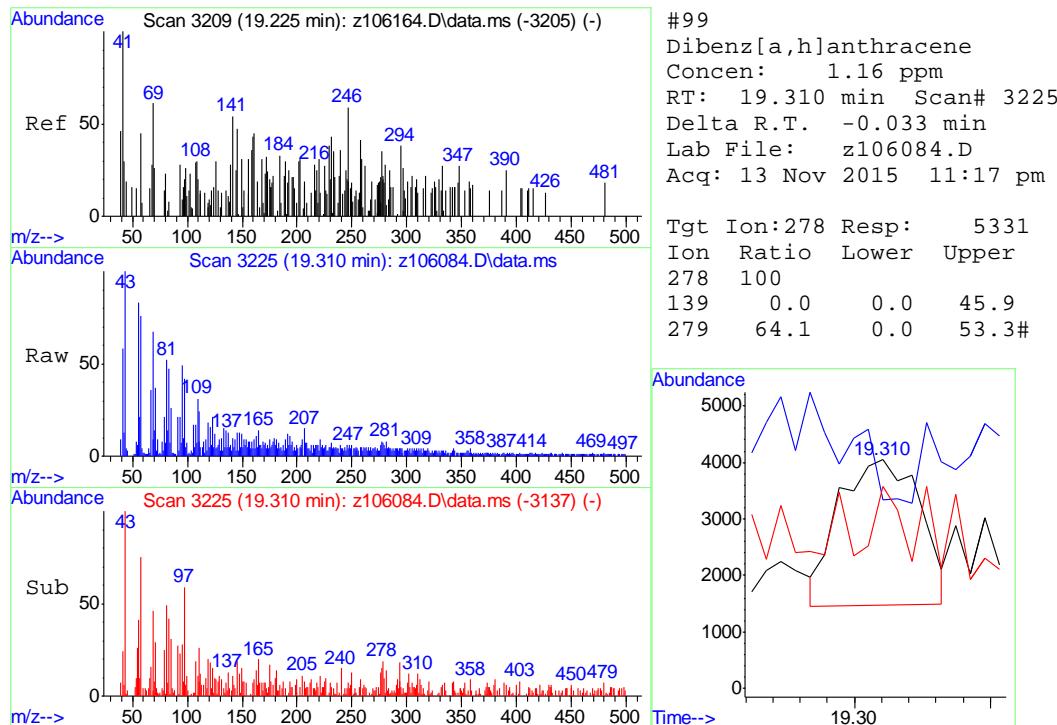








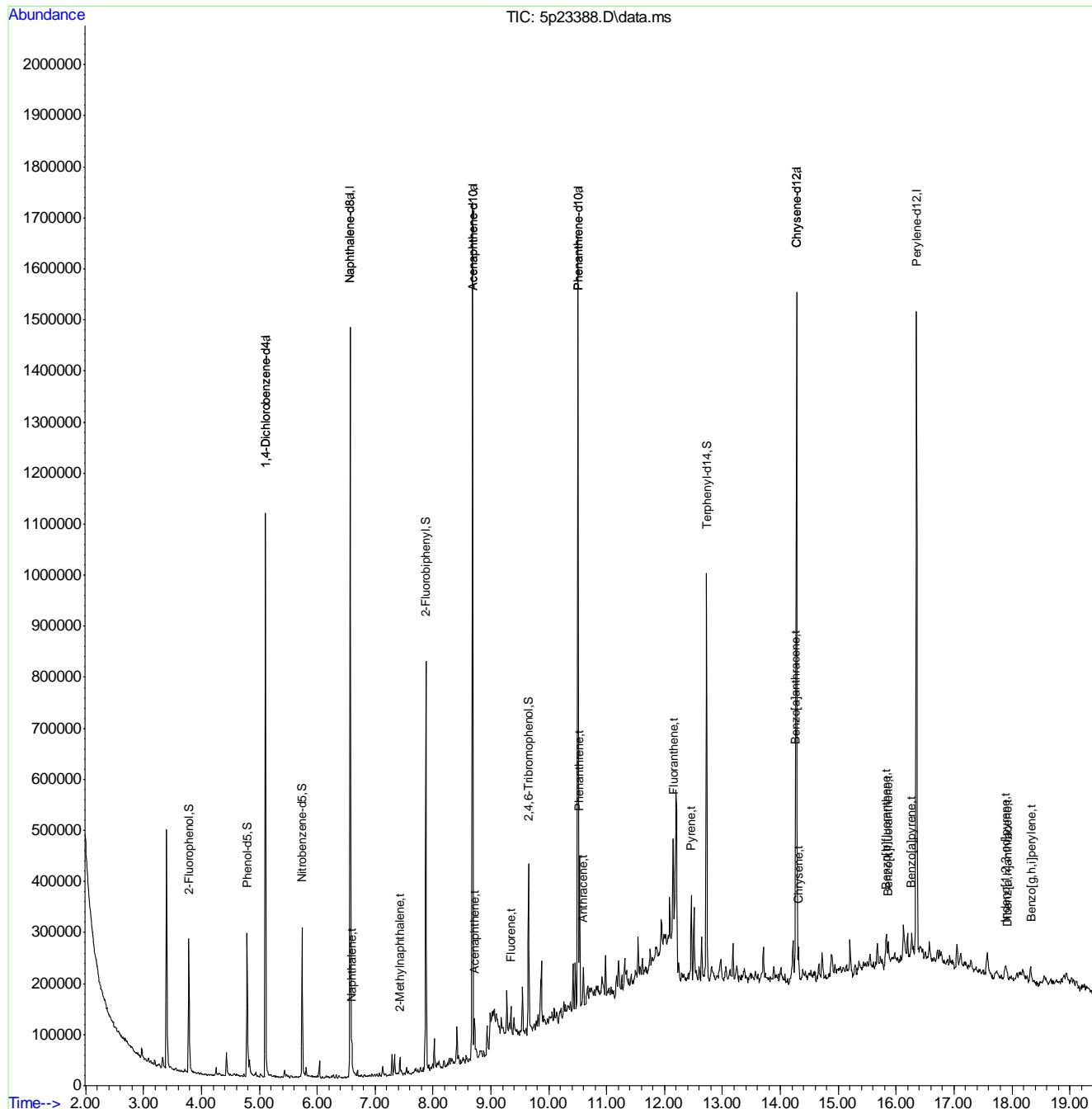


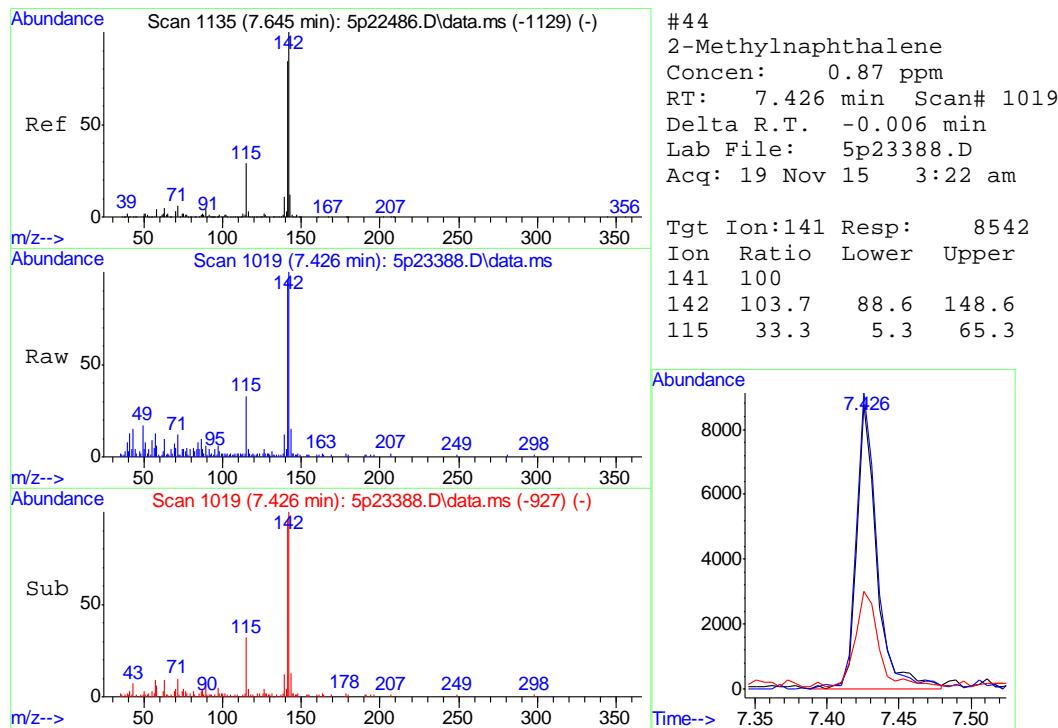
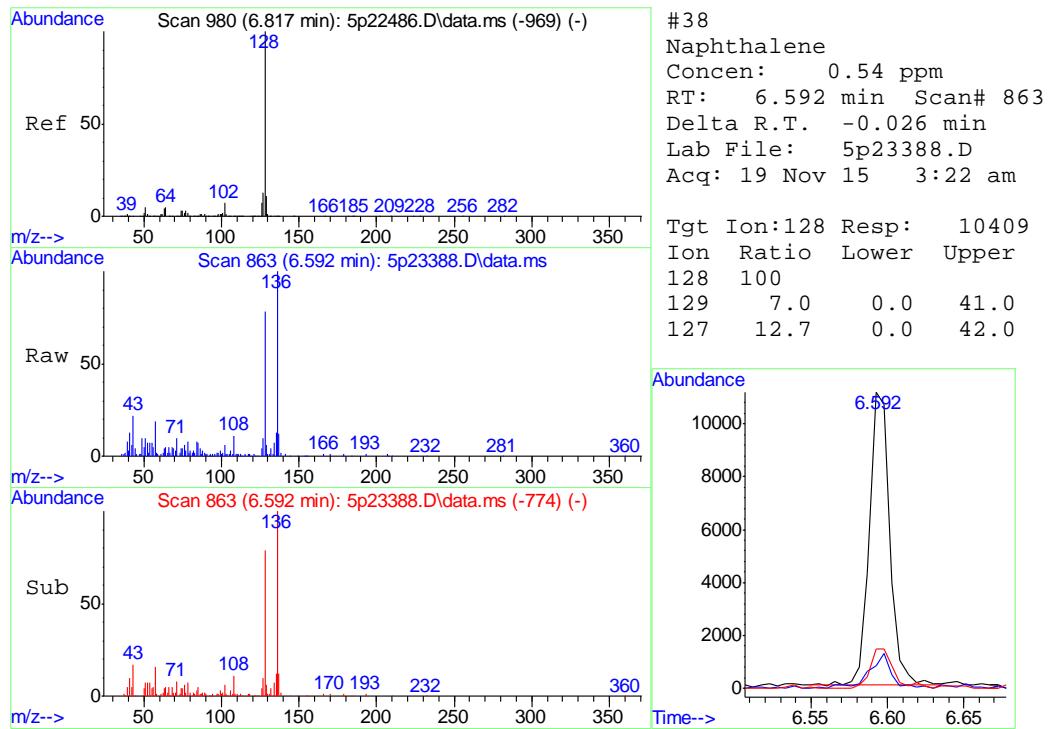


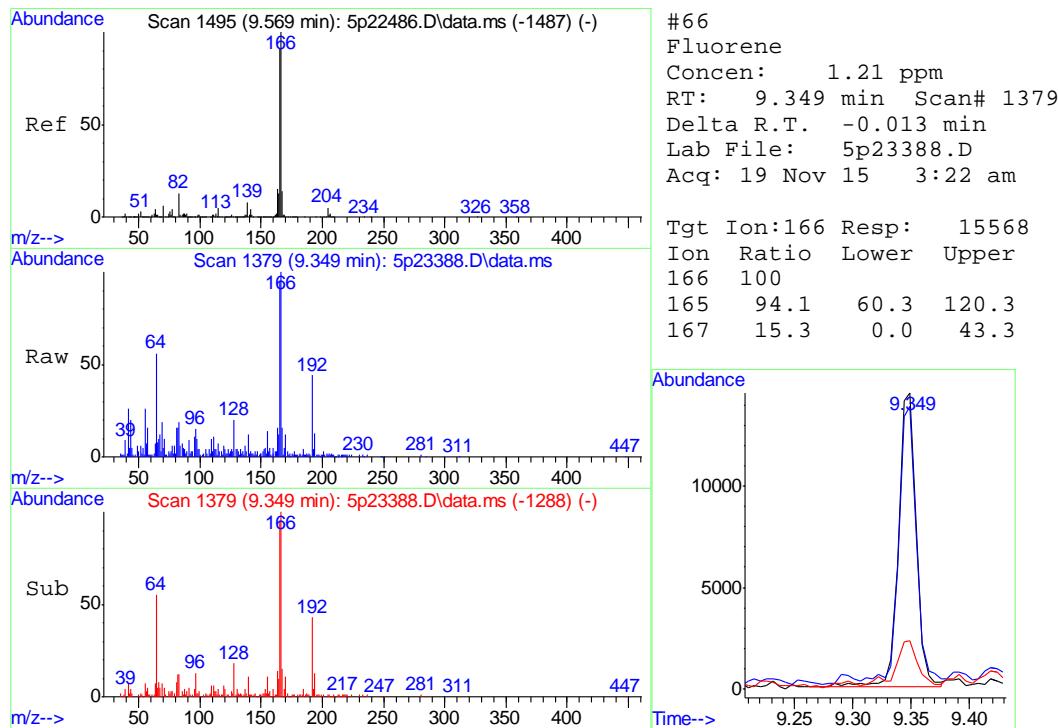
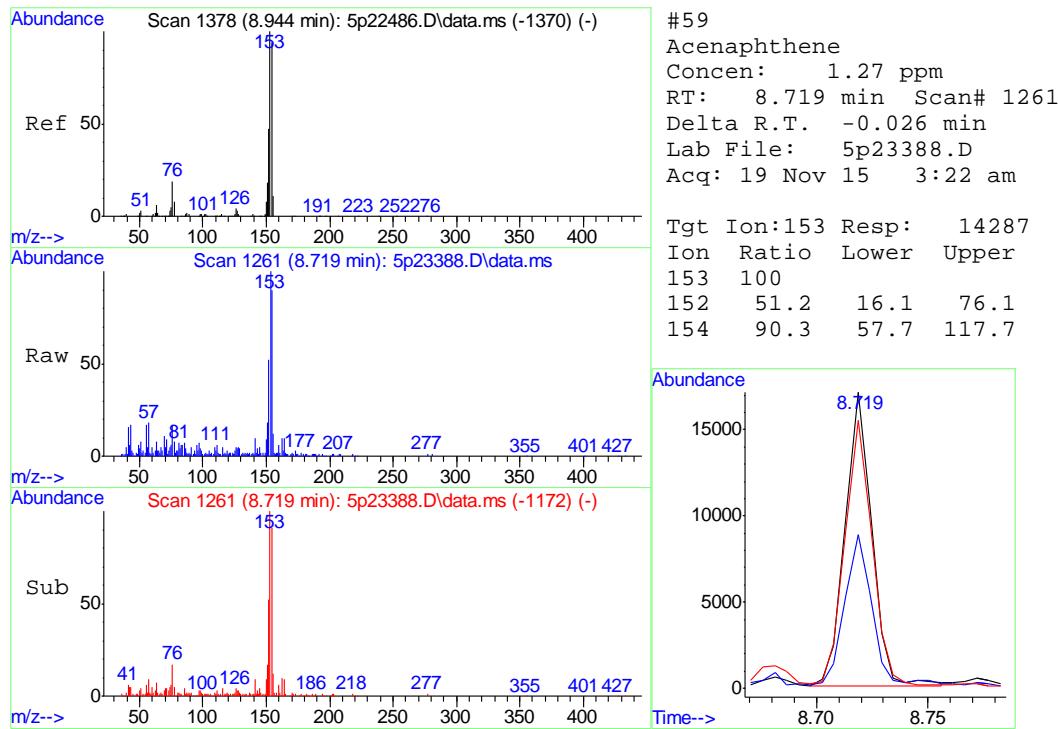
Quantitation Report (QT Reviewed)

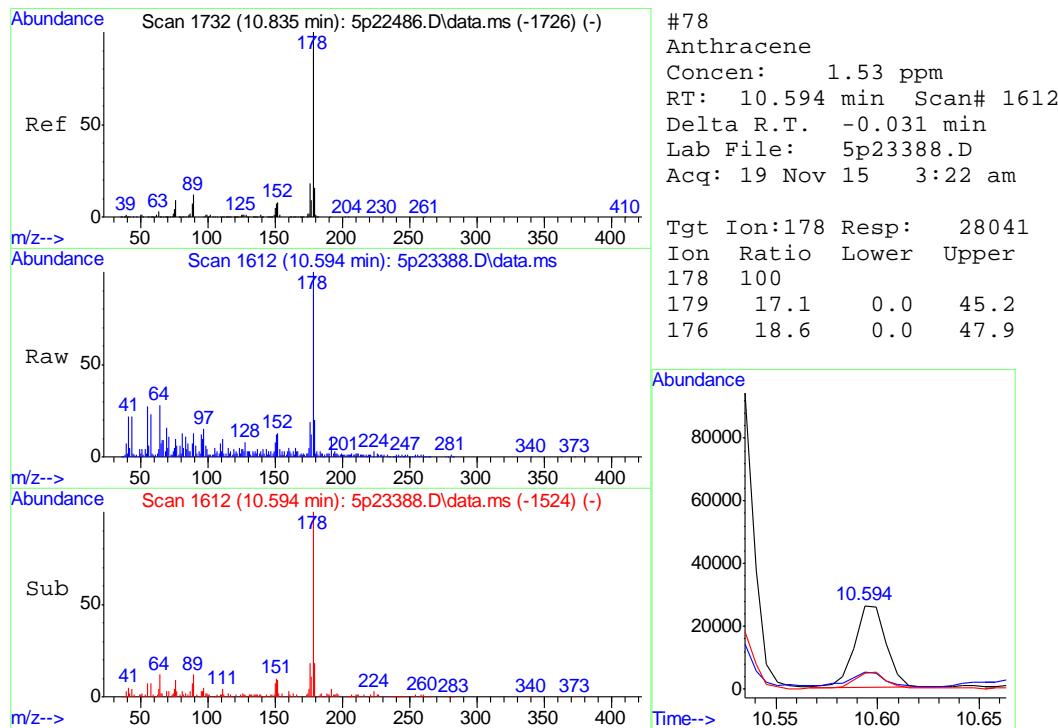
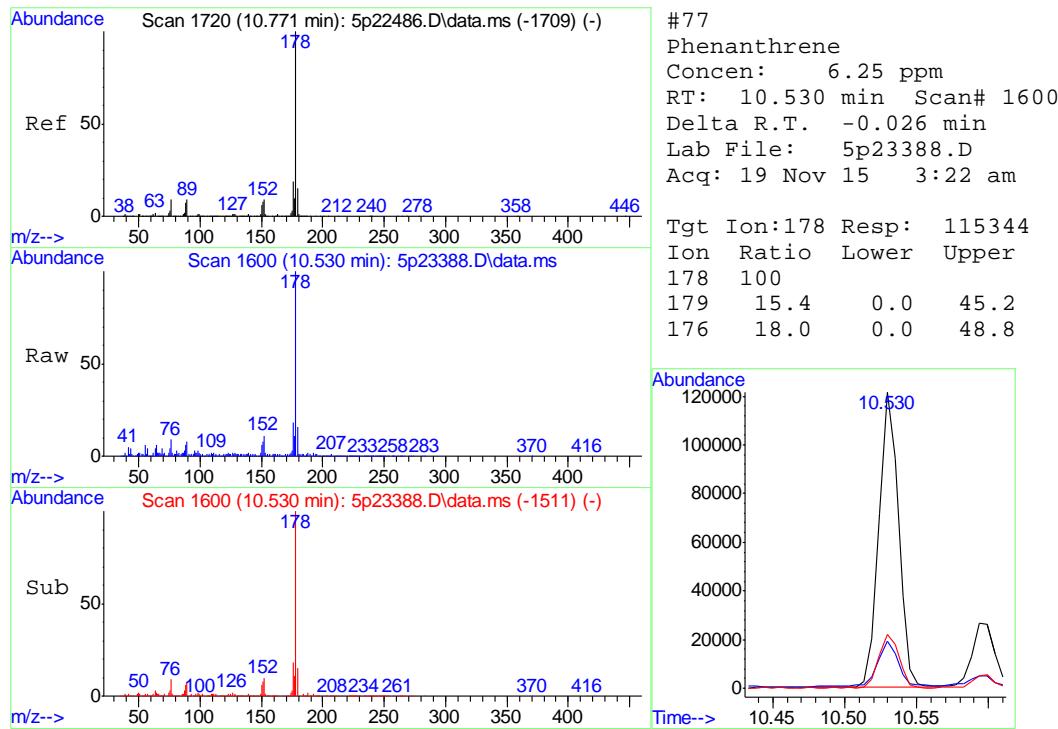
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 Sample : jc7897-2
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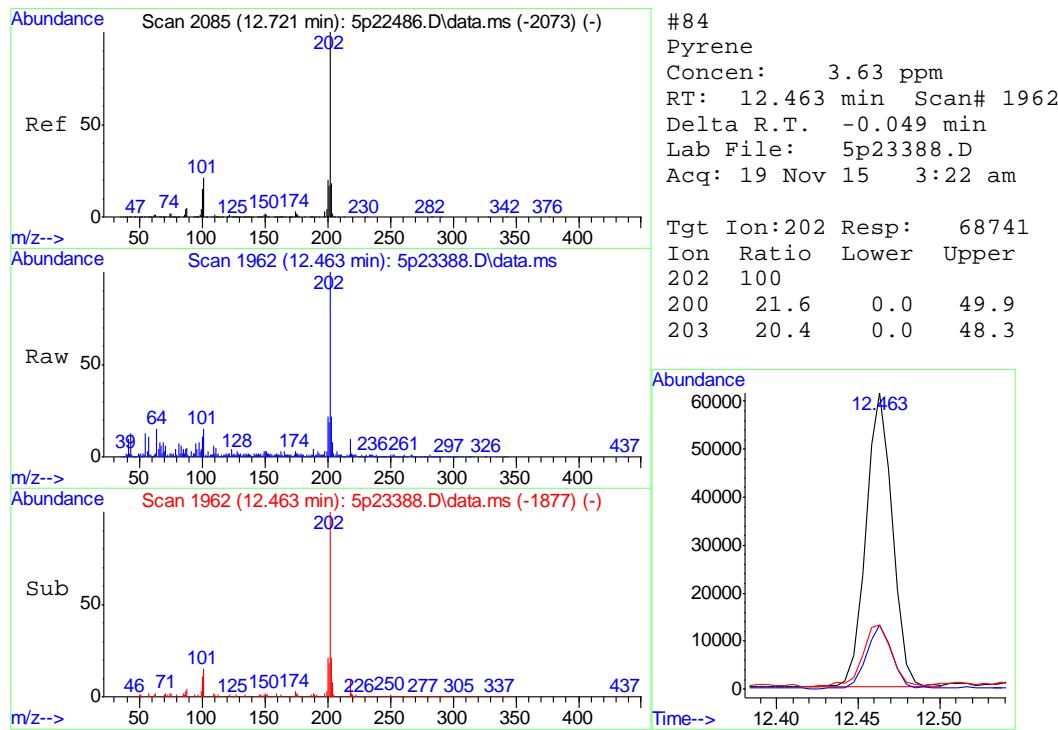
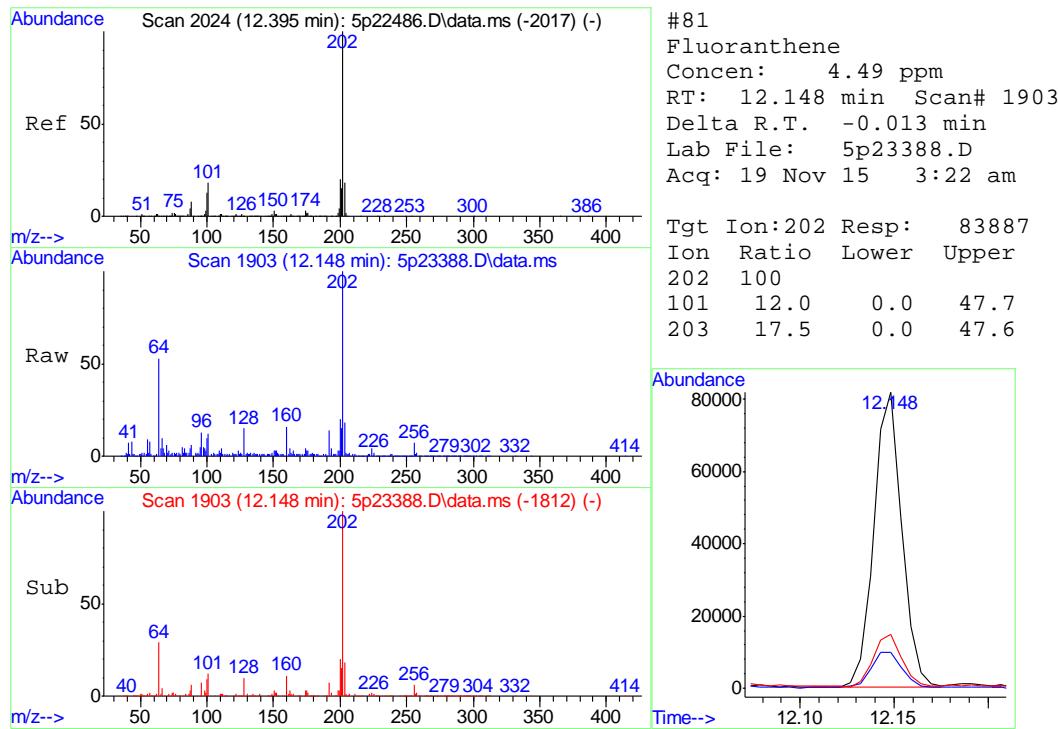
Quant Time: Nov 19 11:45:33 2015
 Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
 Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 QLast Update : Wed Nov 18 14:22:41 2015
 Response via : Initial Calibration

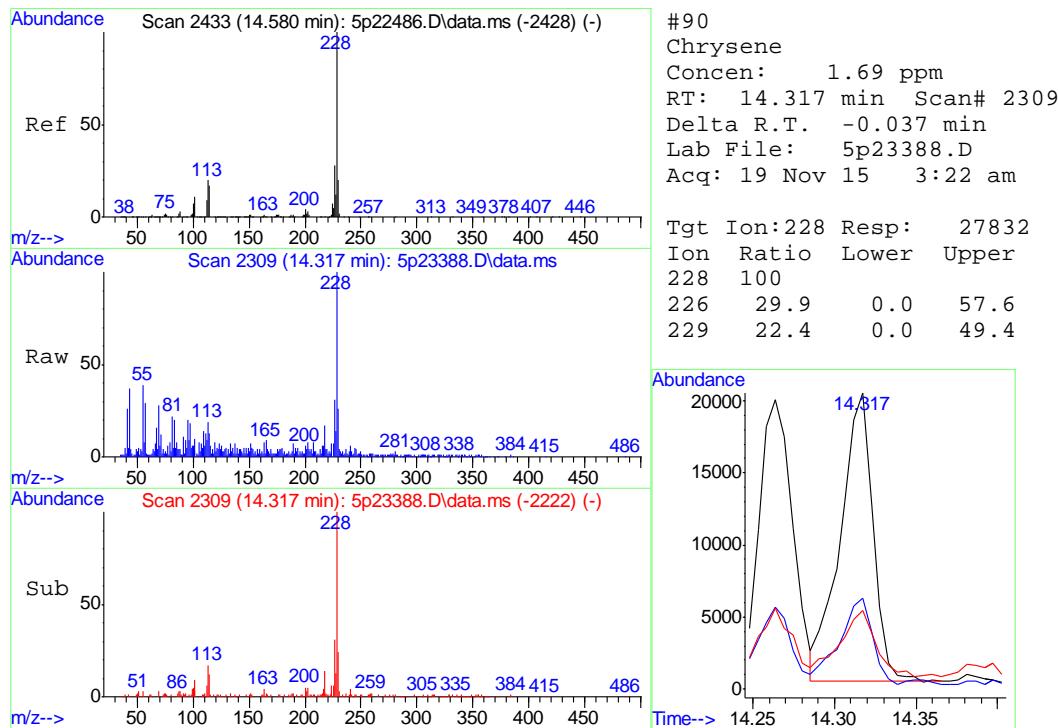
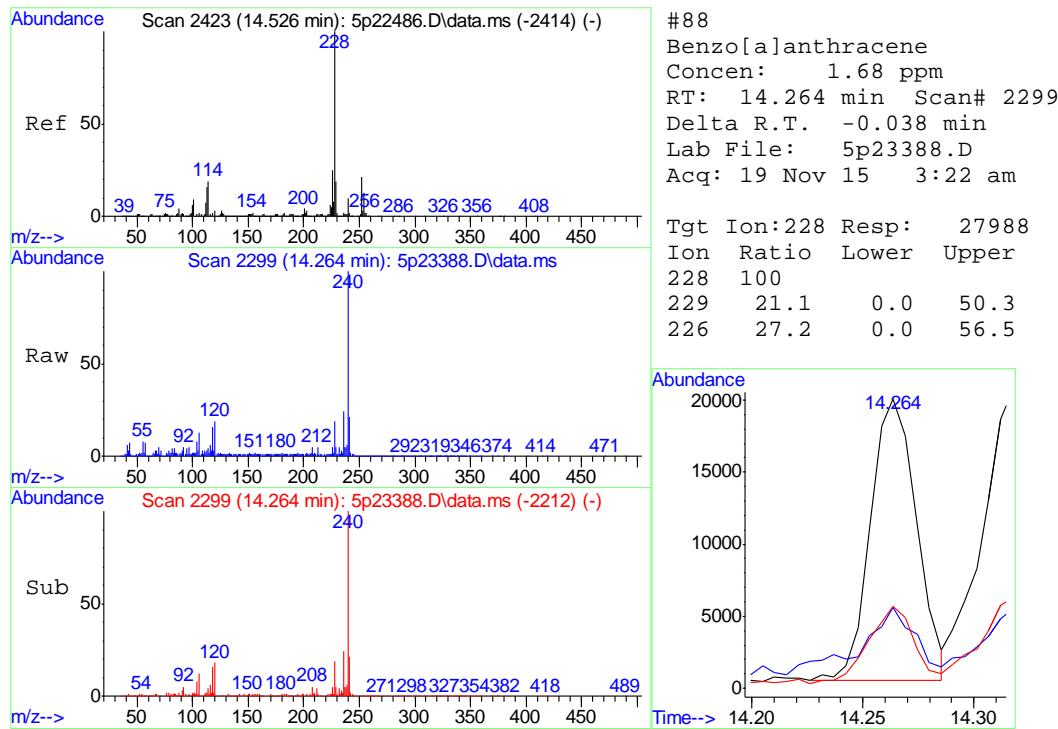


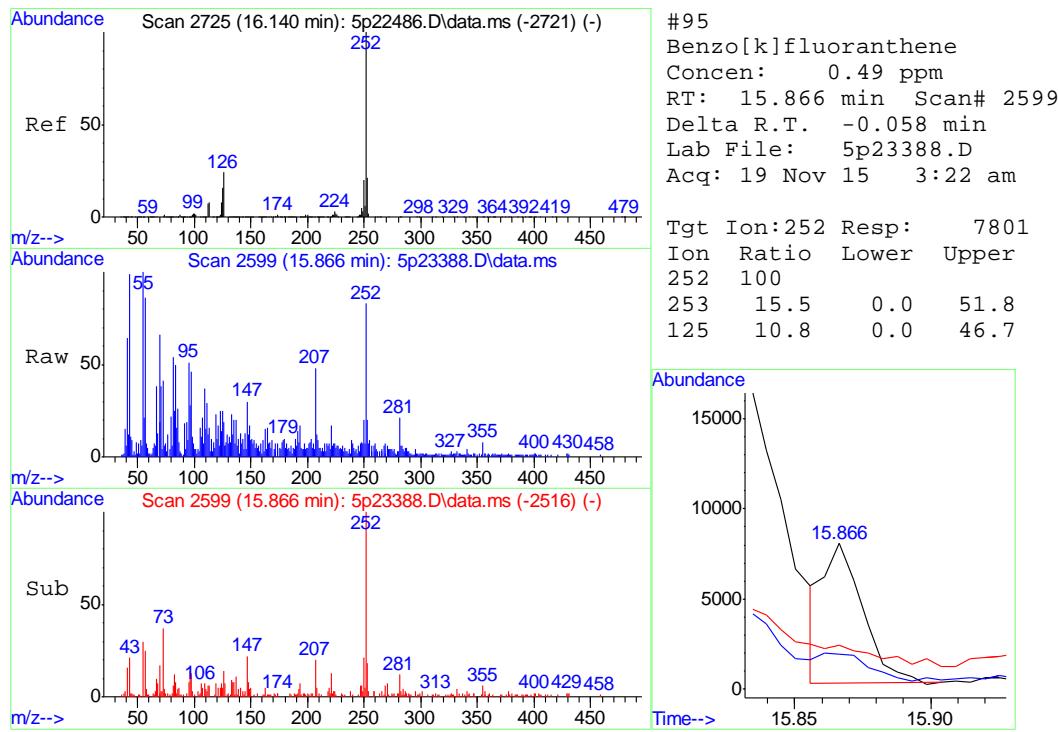
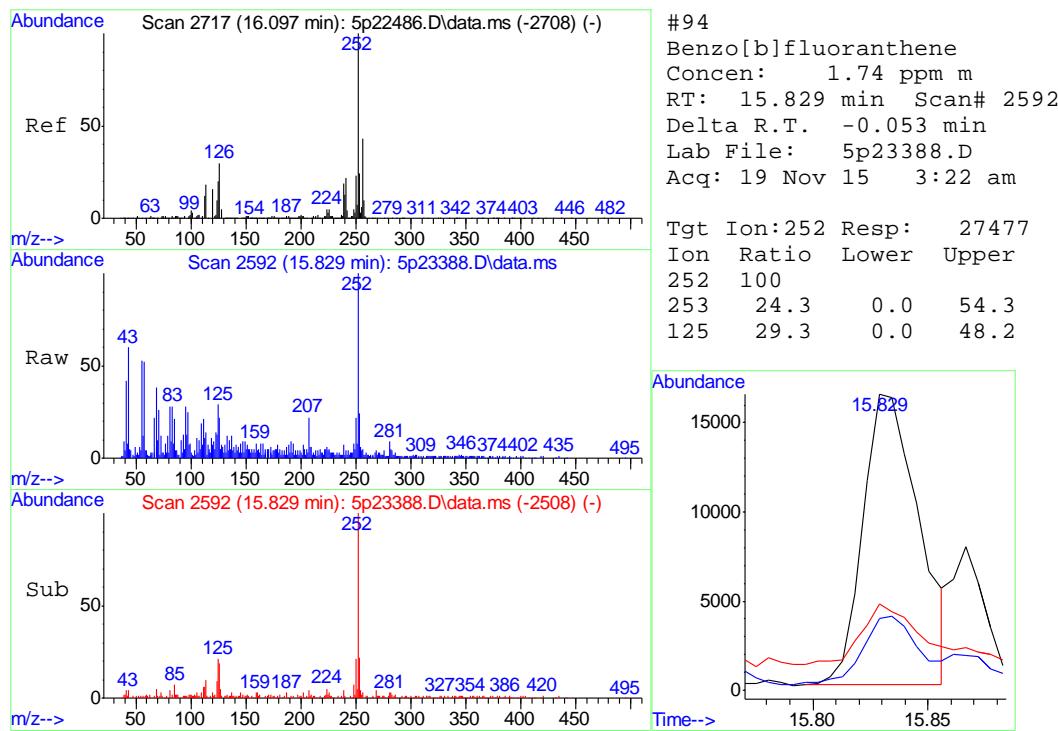


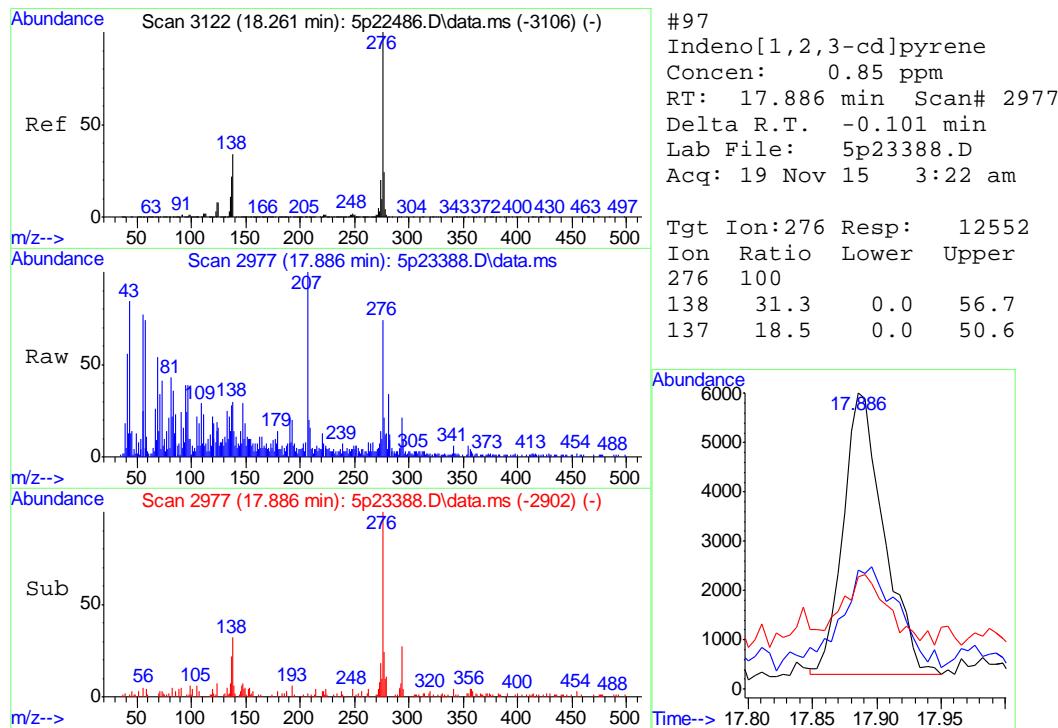
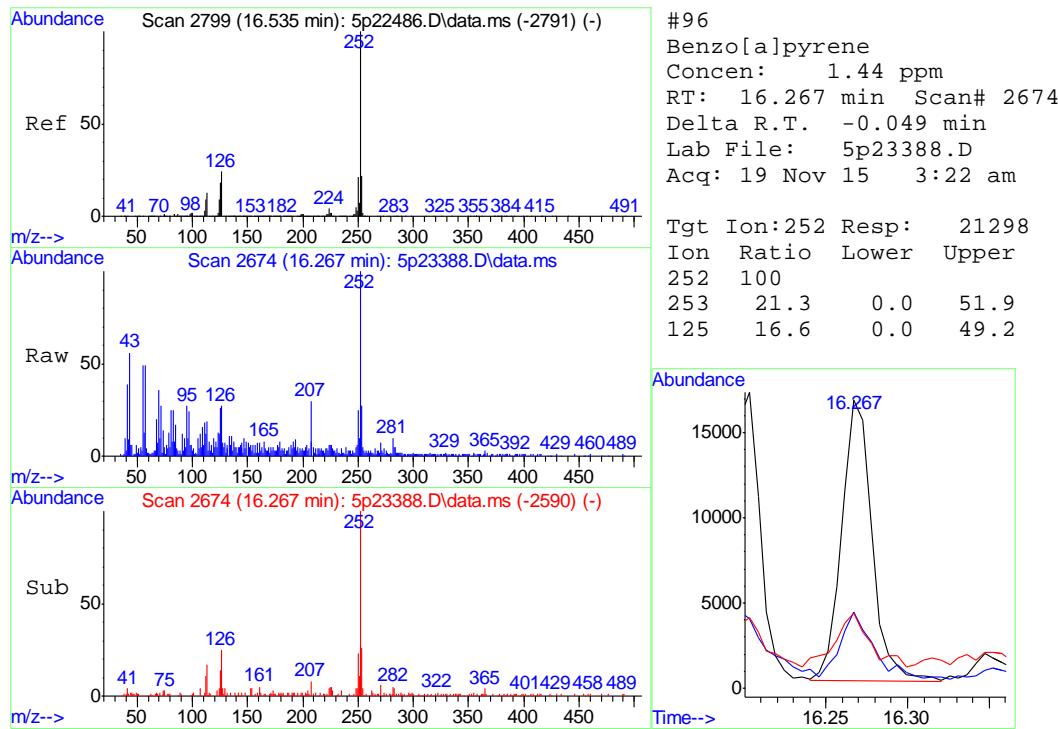


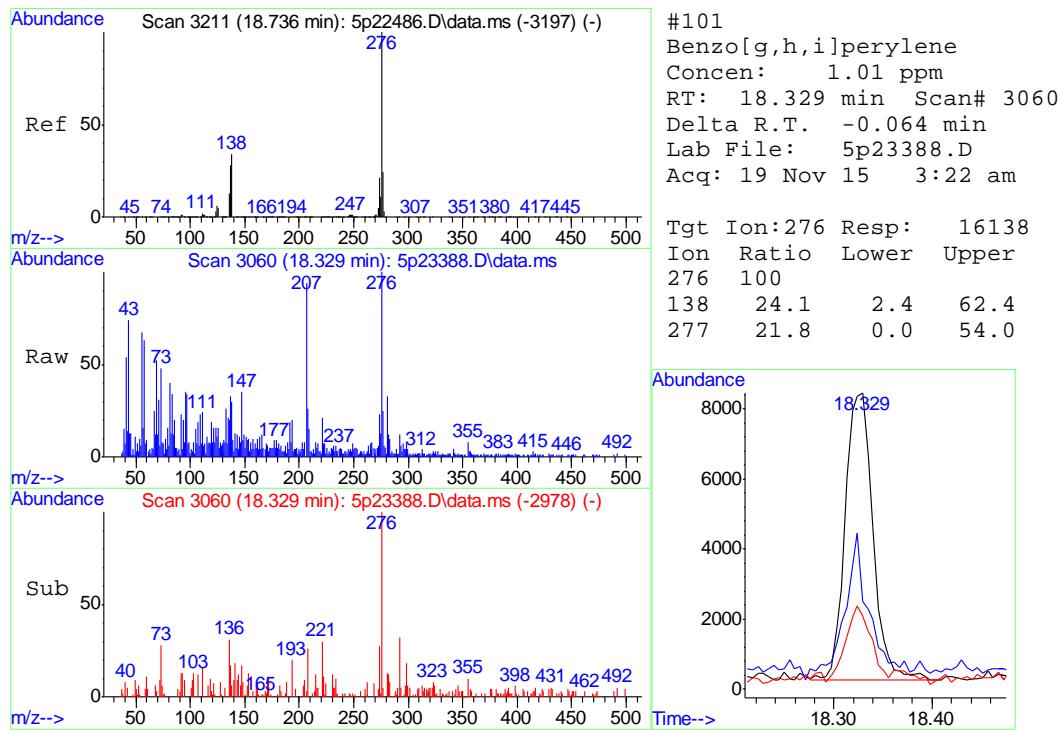
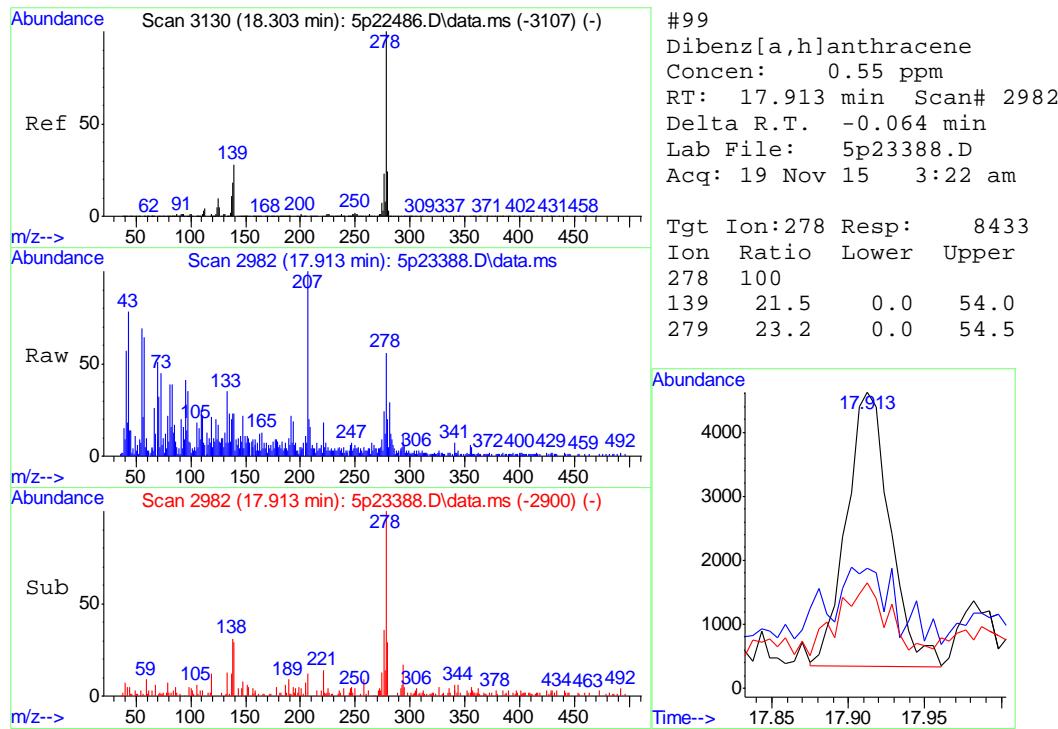












Nina Pandya
 11/19/15 12:39

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1190\
 Data File : 5p23389.D
 Acq On : 19 Nov 15 3:48 am
 Operator : saraw
 Sample : jc7897-3
 Misc : op88822,e5p1190,31.4,,,1,2
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 19 11:48:49 2015
 Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
 Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 QLast Update : Thu Nov 19 11:46:45 2015
 Response via : Initial Calibration

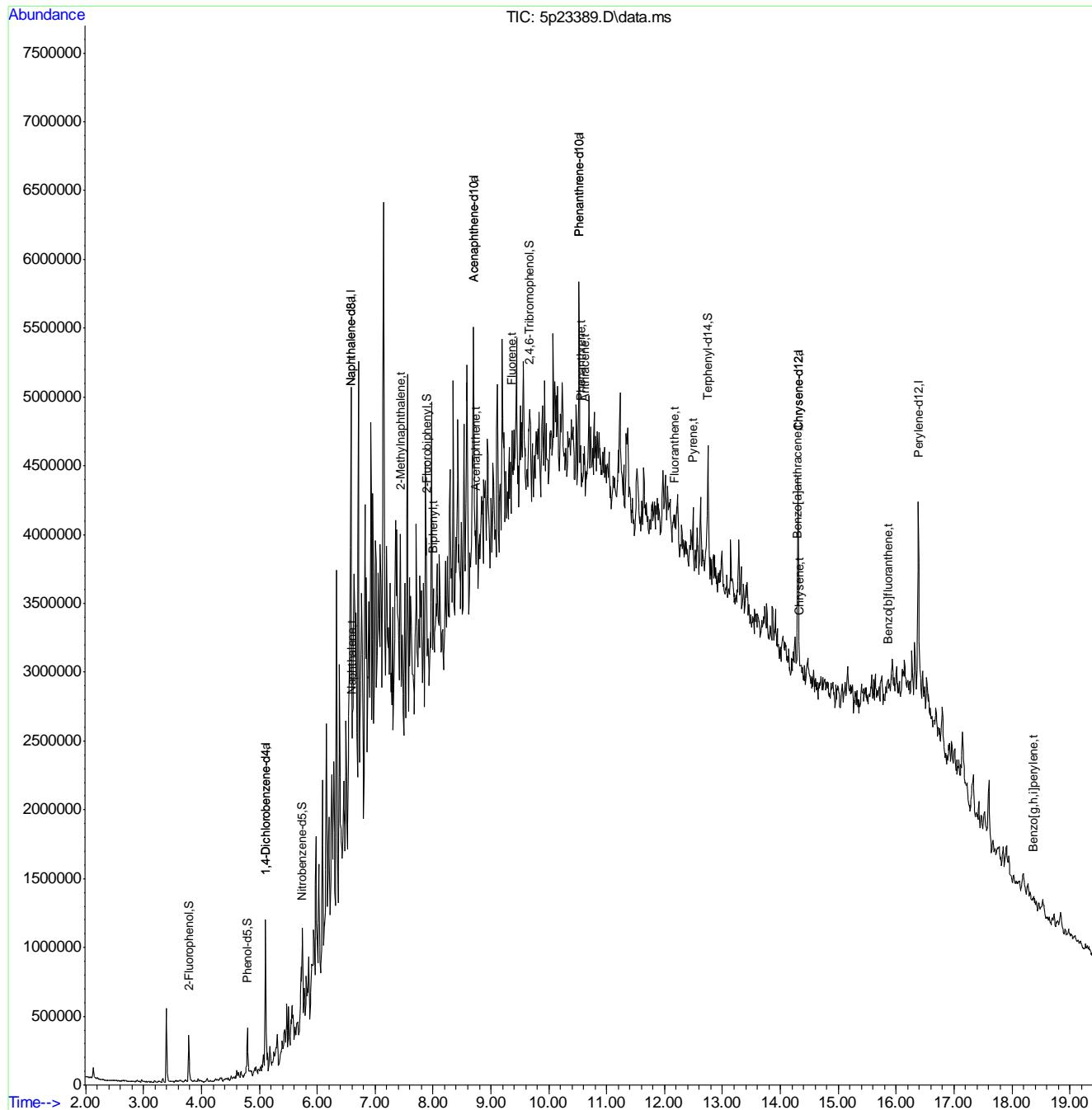
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	5.107	152	167287	40.00	ppm	-0.02
24) Naphthalene-d8	6.576	136	614479	40.00	ppm	-0.02
47) Acenaphthene-d10	8.697	164	389467	40.00	ppm	0.00
69) Phenanthrene-d10	10.524	188	638783	40.00	ppm	0.00
83) Chrysene-d12	14.307	240	596537	40.00	ppm	0.00
92) Perylene-d12	16.385	264	589666	40.00	ppm	0.00
102) 1,4-Dichlorobenzene-d4a	5.107	152	167287	40.00	ppm	-0.02
104) Acenaphthene-d10a	8.697	164	389467	40.00	ppm	0.00
106) Chrysene-d12a	14.307	240	596537	40.00	ppm	0.00
108) Phenanthrene-d10a	10.524	188	638783	40.00	ppm	0.00
110) Naphthalene-d8a	6.576	136	614479	40.00	ppm	-0.02
System Monitoring Compounds						
5) 2-Fluorophenol	3.777	112	111176	18.49	ppm	0.00
Spiked Amount	50.000		Recovery	=	36.98%	
8) Phenol-d5	4.792	99	139862	19.45	ppm	0.02
Spiked Amount	50.000		Recovery	=	38.90%	
25) Nitrobenzene-d5	5.738	82	113553	21.41	ppm	-0.03
Spiked Amount	50.000		Recovery	=	42.82%	
51) 2-Fluorobiphenyl	7.885	172	290042	23.54	ppm	-0.03
Spiked Amount	50.000		Recovery	=	47.08%	
73) 2,4,6-Tribromophenol	9.670	330	37283	21.21	ppm	0.00
Spiked Amount	50.000		Recovery	=	42.42%	
85) Terphenyl-d14	12.752	244	291453	23.84	ppm	-0.02
Spiked Amount	50.000		Recovery	=	47.68%	
Target Compounds						
38) Naphthalene	6.603	128	123616	6.75	ppm	84
44) 2-Methylnaphthalene	7.436	141	187004	20.18	ppm	94
53) Biphenyl	8.003	154	16331	1.13	ppm	99
59) Acenaphthene	8.735	153	47745	4.05	ppm	90
66) Fluorene	9.365	166	66510	4.97	ppm	98
77) Phenanthrene	10.551	178	112319	5.64	ppm	94
78) Anthracene	10.615	178	38768m	1.96	ppm	
81) Fluoranthene	12.175	202	18524	0.92	ppm	88
84) Pyrene	12.490	202	203331	9.90	ppm	99
88) Benzo[a]anthracene	14.296	228	16491	0.91	ppm	59
90) Chrysene	14.328	228	28407	1.59	ppm	91
94) Benzo[b]fluoranthene	15.867	252	8635	0.50	ppm	46
101) Benzo[g,h,i]perylene	18.372	276	12189	0.71	ppm	81

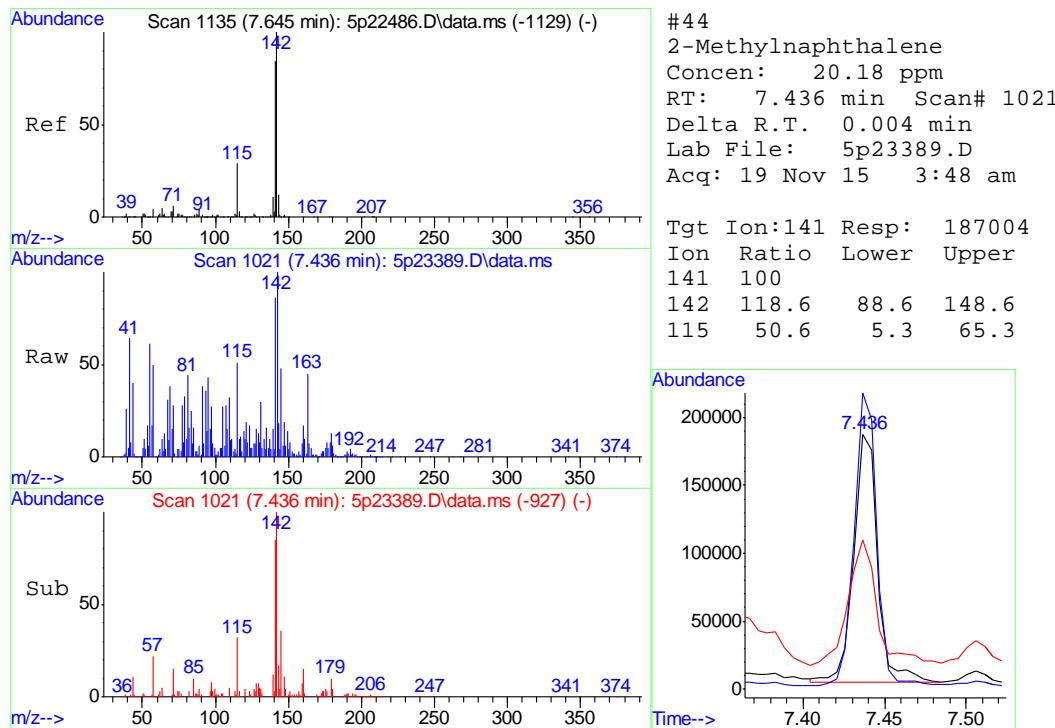
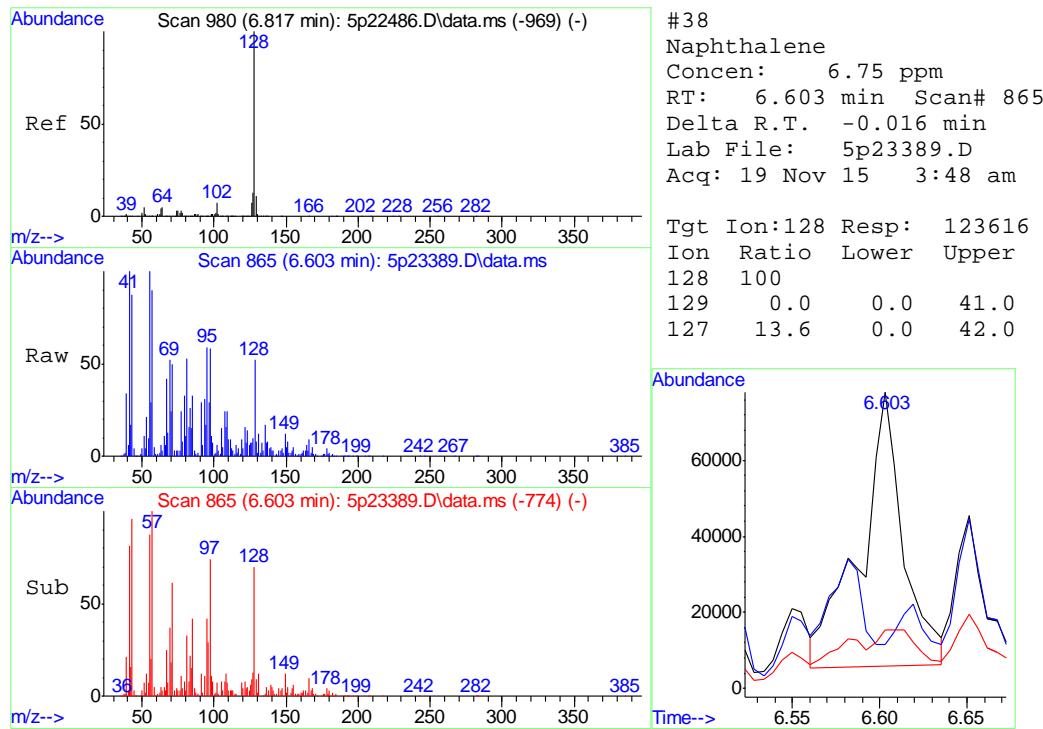
(#) = qualifier out of range (m) = manual integration (+) = signals summed

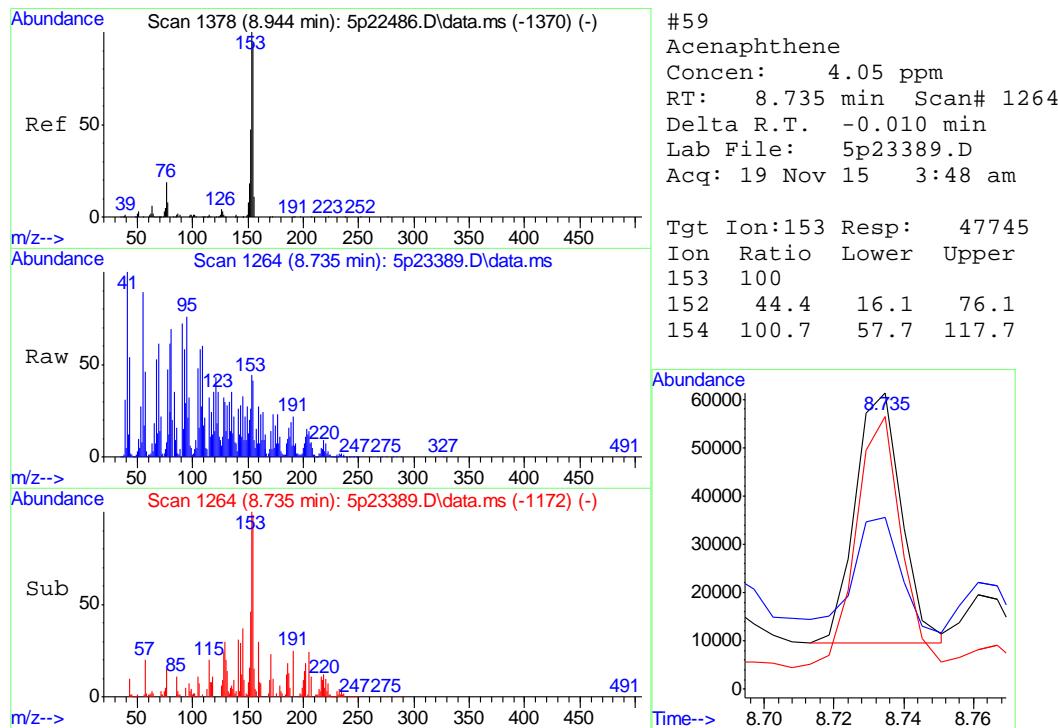
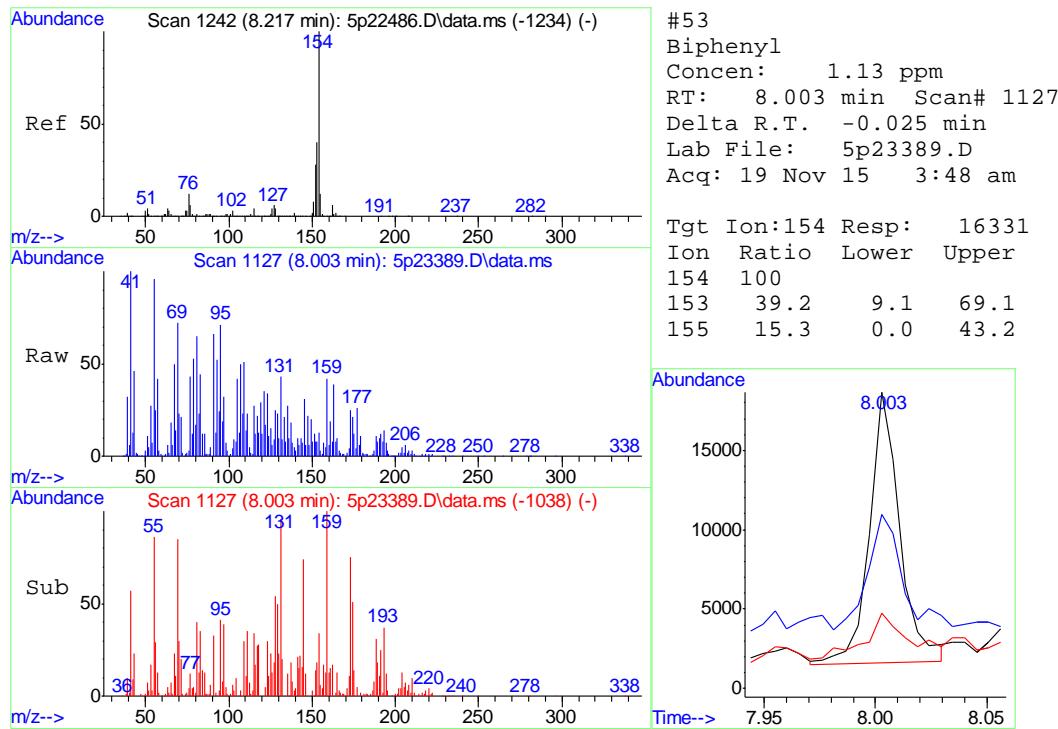
Quantitation Report (QT Reviewed)

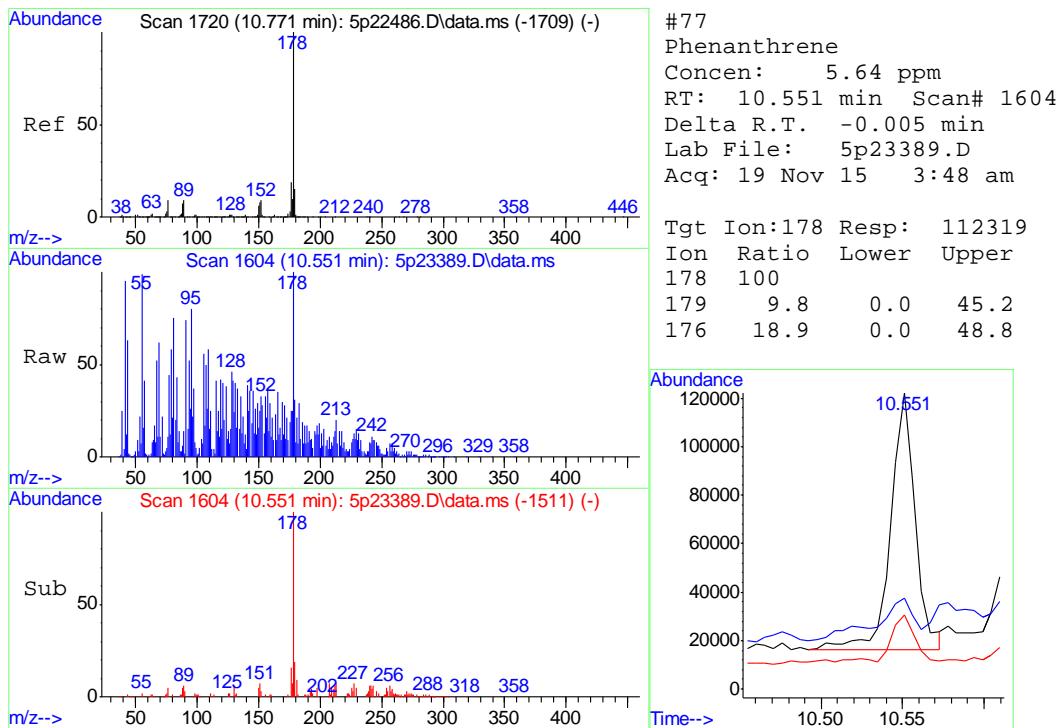
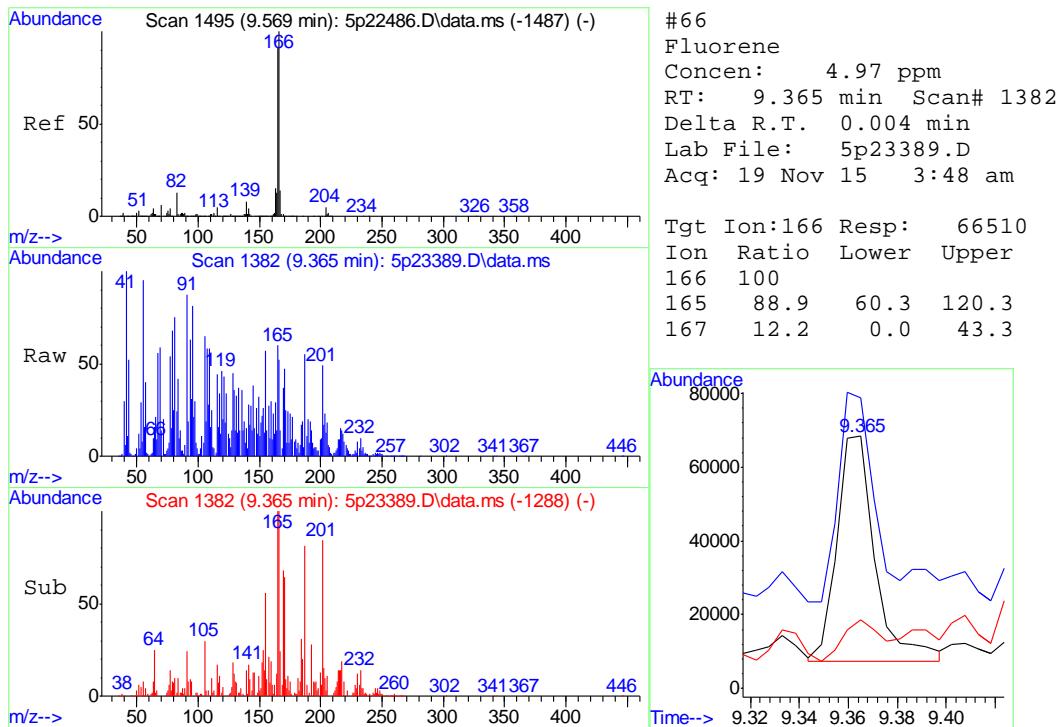
Data Path : C:\msdchem\1\DATA\e5p1190\
 Data File : 5p23389.D
 Acq On : 19 Nov 15 3:48 am
 Operator : saraw
 Sample : jc7897-3
 Misc : op88822,e5p1190,31.4,,,1,2
 ALS Vial : 18 Sample Multiplier: 1

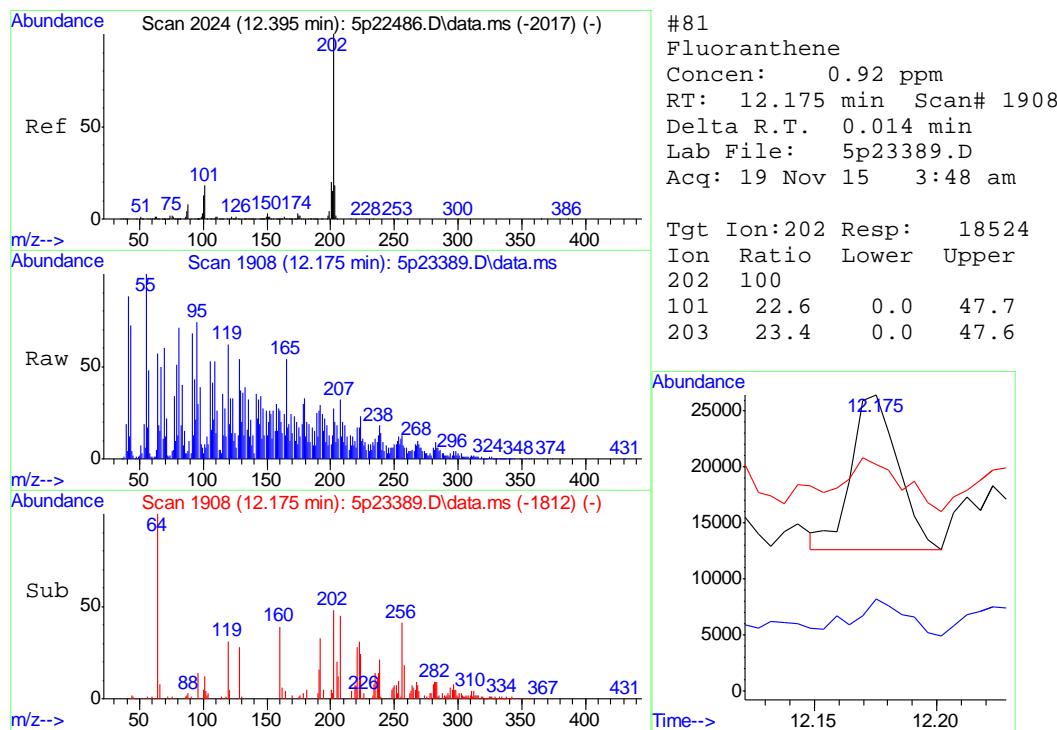
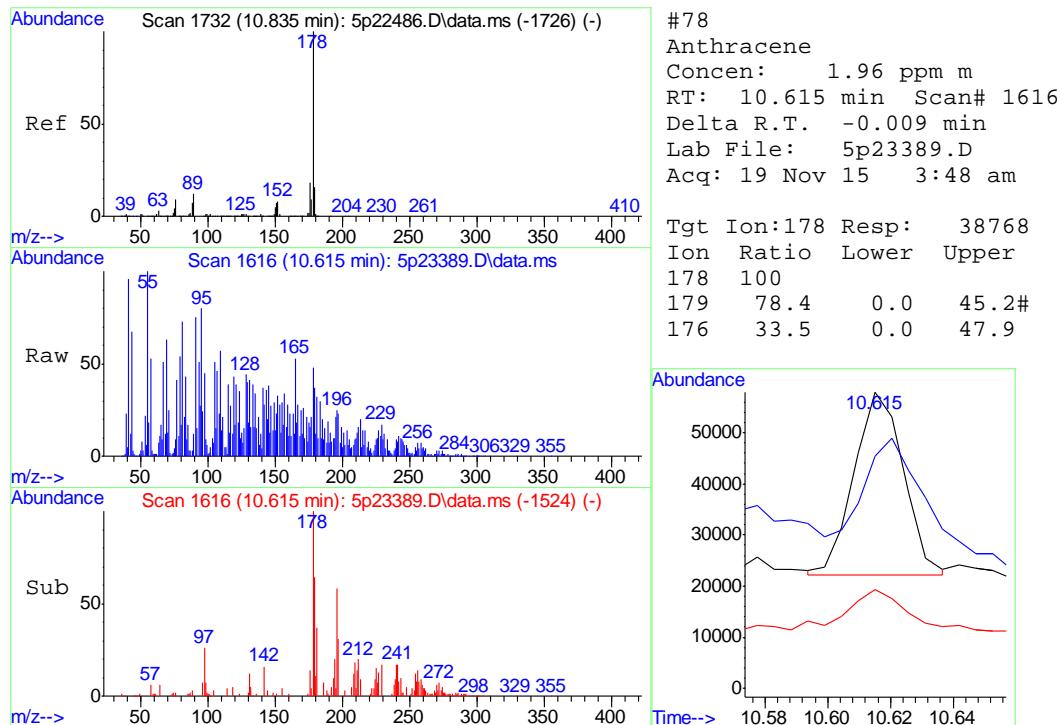
Quant Time: Nov 19 11:48:49 2015
 Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
 Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 QLast Update : Thu Nov 19 11:46:45 2015
 Response via : Initial Calibration

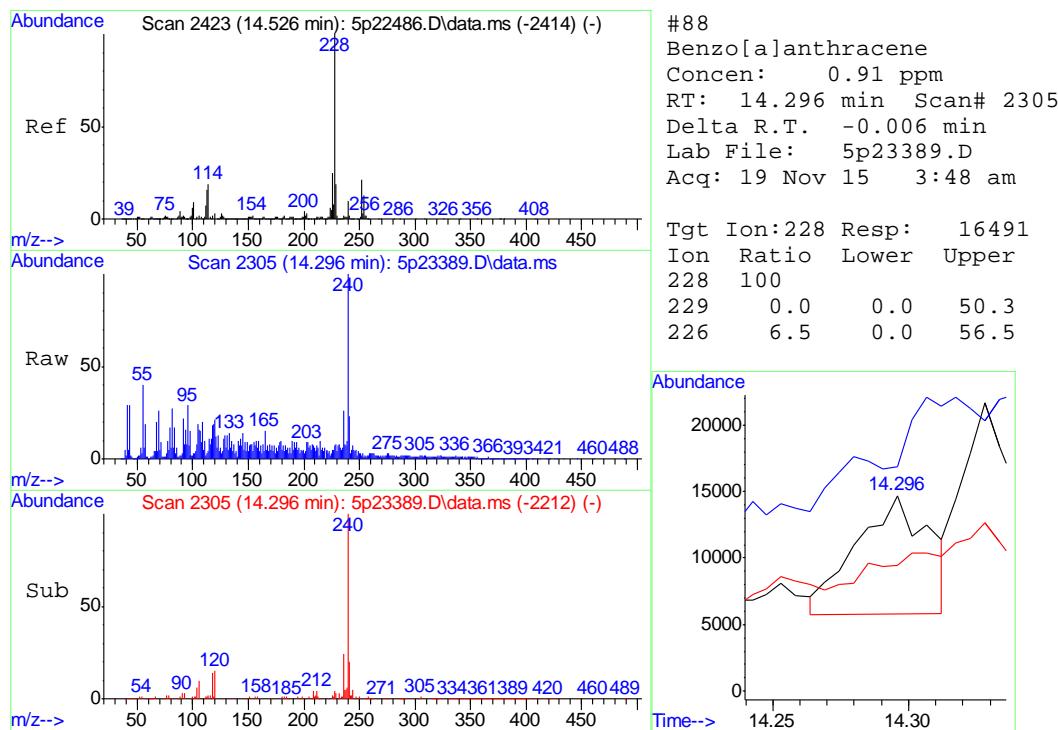
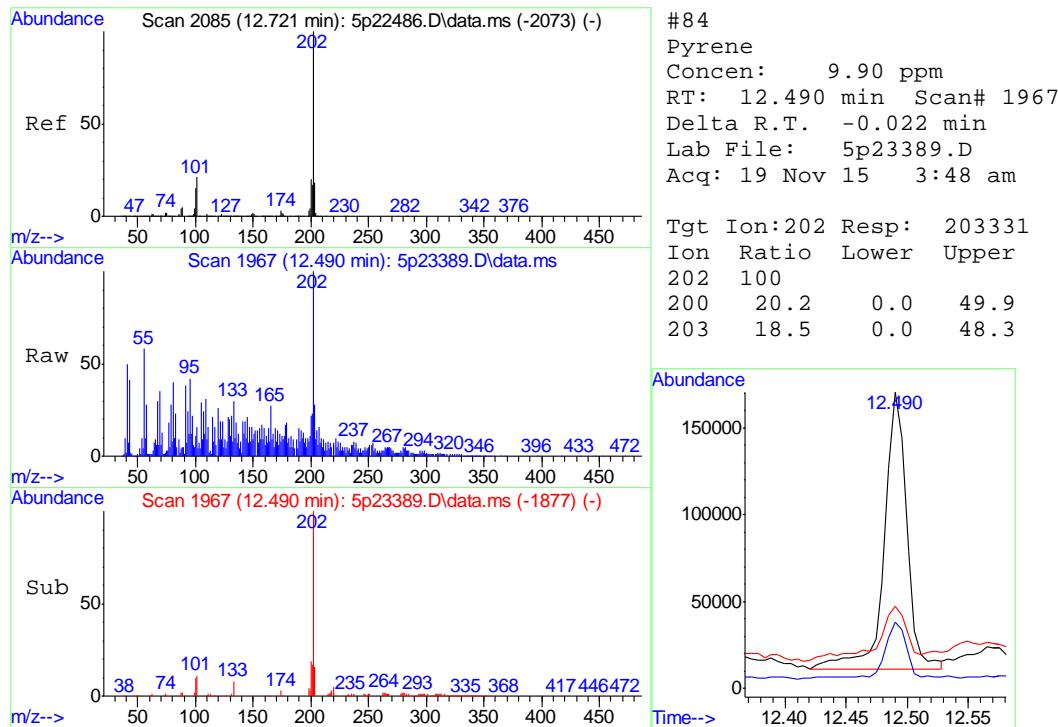


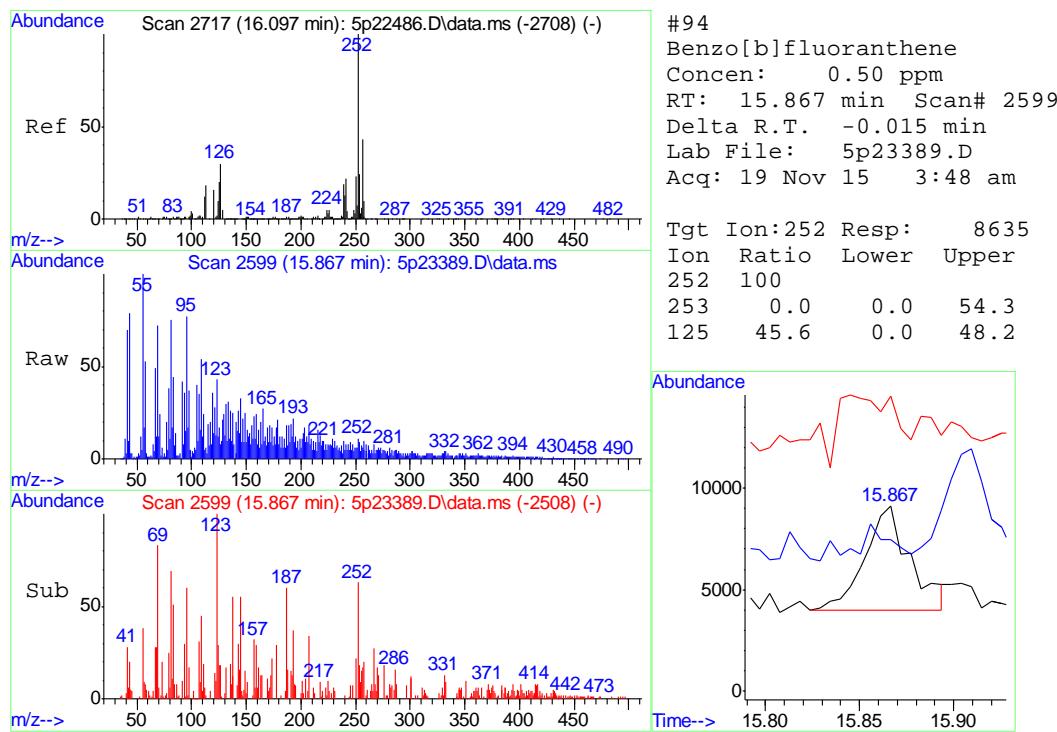
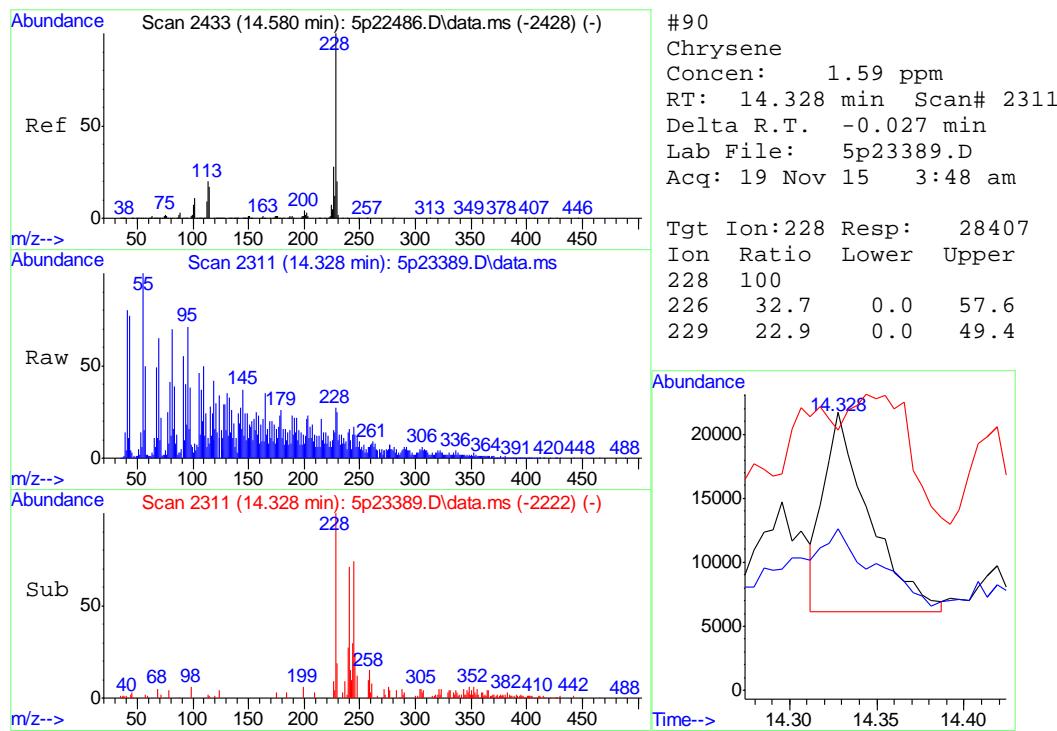


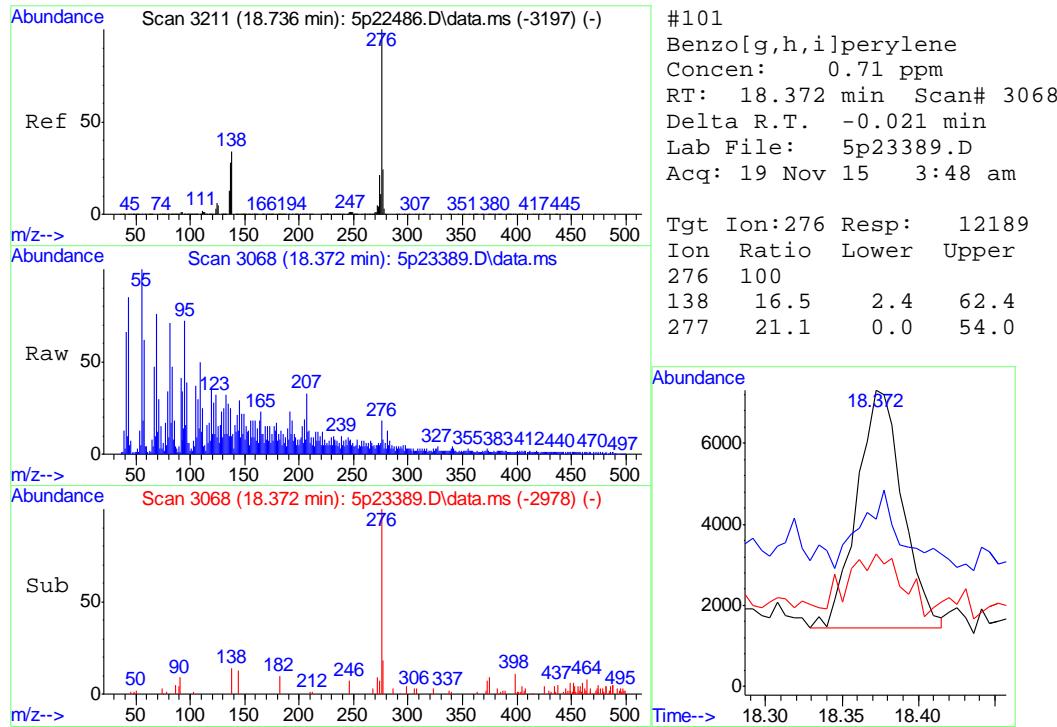












Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1185\
 Data File : 5p23284.D
 Acq On : 16 Nov 2015 3:48 pm
 Operator : alicjap
 Sample : op88822-mb1
 Misc : op88822,e5p1185,30.0,,,1,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 17 13:00:12 2015
 Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
 Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 QLast Update : Fri Nov 13 19:32:26 2015
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	5.145	152	283547	40.00	ppm	-0.02
24) Naphthalene-d8	6.608	136	1054170	40.00	ppm	-0.04
47) Acenaphthene-d10	8.719	164	591197	40.00	ppm	-0.03
69) Phenanthrene-d10	10.540	188	914937	40.00	ppm	-0.06
83) Chrysene-d12	14.323	240	725516	40.00	ppm	-0.14
92) Perylene-d12	16.395	264	659829	40.00	ppm	-0.14
102) 1,4-Dichlorobenzene-d4a	5.145	152	283547	40.00	ppm	-0.02
104) Acenaphthene-d10a	8.719	164	591197	40.00	ppm	-0.03
106) Chrysene-d12a	14.323	240	725516	40.00	ppm	-0.14
108) Phenanthrene-d10a	10.540	188	914937	40.00	ppm	-0.06
110) Naphthalene-d8a	6.608	136	1054170	40.00	ppm	-0.04
System Monitoring Compounds						
5) 2-Fluorophenol	3.798	112	417636	40.99	ppm	-0.02
Spiked Amount 50.000			Recovery =	81.98%		
8) Phenol-d5	4.792	99	507830	41.67	ppm	-0.01
Spiked Amount 50.000			Recovery =	83.34%		
25) Nitrobenzene-d5	5.775	82	426638	46.88	ppm	-0.04
Spiked Amount 50.000			Recovery =	93.76%		
51) 2-Fluorobiphenyl	7.917	172	873288	46.68	ppm	-0.03
Spiked Amount 50.000			Recovery =	93.36%		
73) 2,4,6-Tribromophenol	9.686	330	89718	35.63	ppm	-0.06
Spiked Amount 50.000			Recovery =	71.26%		
85) Terphenyl-d14	12.773	244	695599	46.79	ppm	-0.13
Spiked Amount 50.000			Recovery =	93.58%		
Target Compounds				Qvalue		
<hr/>						

(#) = qualifier out of range (m) = manual integration (+) = signals summed

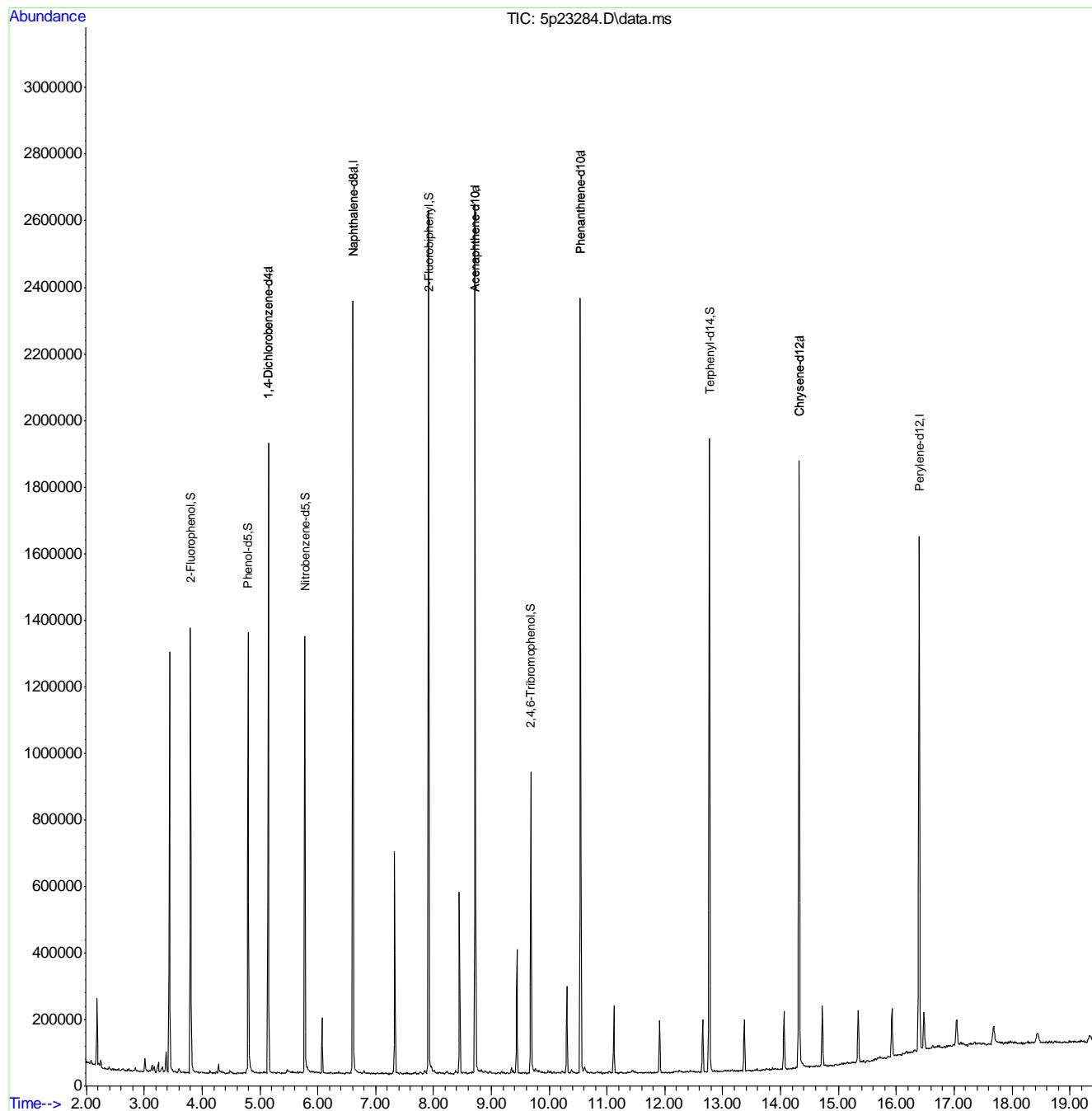
9.2.1

9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1185\
 Data File : 5p23284.D
 Acq On : 16 Nov 2015 3:48 pm
 Operator : alicjap
 Sample : op88822-mb1
 Misc : op88822,e5p1185,30.0,,,1,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 17 13:00:12 2015
 Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
 Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
 QLast Update : Fri Nov 13 19:32:26 2015
 Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\EZ5295\
 Data File : z106071.D
 Acq On : 13 Nov 2015 4:27 pm
 Operator : brittanp
 Sample : op88822-mb1
 Misc : op88822,ez5295,30.0
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 16 13:38:50 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MZ5278.M
 Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 QLast Update : Fri Nov 13 16:31:41 2015
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.667	152	124590	40.00	ppm	-0.05
24) Naphthalene-d8	5.586	136	465015	40.00	ppm	-0.05
47) Acenaphthene-d10	6.986	164	290866	40.00	ppm	-0.06
69) Phenanthrene-d10	8.834	188	512732	40.00	ppm	-0.09
83) Chrysene-d12	14.054	240	567261	40.00	ppm	-0.13
92) Perylene-d12	17.099	264	551497	40.00	ppm	-0.13
102) 1,4-Dichlorobenzene-d4a	4.667	152	124590	40.00	ppm	-0.05
104) Phenanthrene-d10a	8.834	188	512732	40.00	ppm	-0.09
106) Chrysene-d12a	14.054	240	567261	40.00	ppm	-0.13
108) Acenaphthene-d10a	6.986	164	290866	40.00	ppm	-0.06
110) Naphthalene-d8a	5.586	136	465015	40.00	ppm	-0.05
System Monitoring Compounds						
5) 2-Fluorophenol	3.727	112	164828	36.37	ppm	-0.07
Spiked Amount 50.000			Recovery =	72.74%		
8) Phenol-d5	4.443	99	202345	34.63	ppm	-0.07
Spiked Amount 50.000			Recovery =	69.26%		
25) Nitrobenzene-d5	5.073	82	230604	43.45	ppm	-0.05
Spiked Amount 50.000			Recovery =	86.90%		
51) 2-Fluorobiphenyl	6.382	172	452408	45.14	ppm	-0.05
Spiked Amount 50.000			Recovery =	90.28%		
73) 2,4,6-Tribromophenol	7.862	330	76914	48.14	ppm	-0.08
Spiked Amount 50.000			Recovery =	96.28%		
86) Terphenyl-d14	11.847	244	570264	43.45	ppm	-0.10
Spiked Amount 50.000			Recovery =	86.90%		
Target Compounds						
					Qvalue	

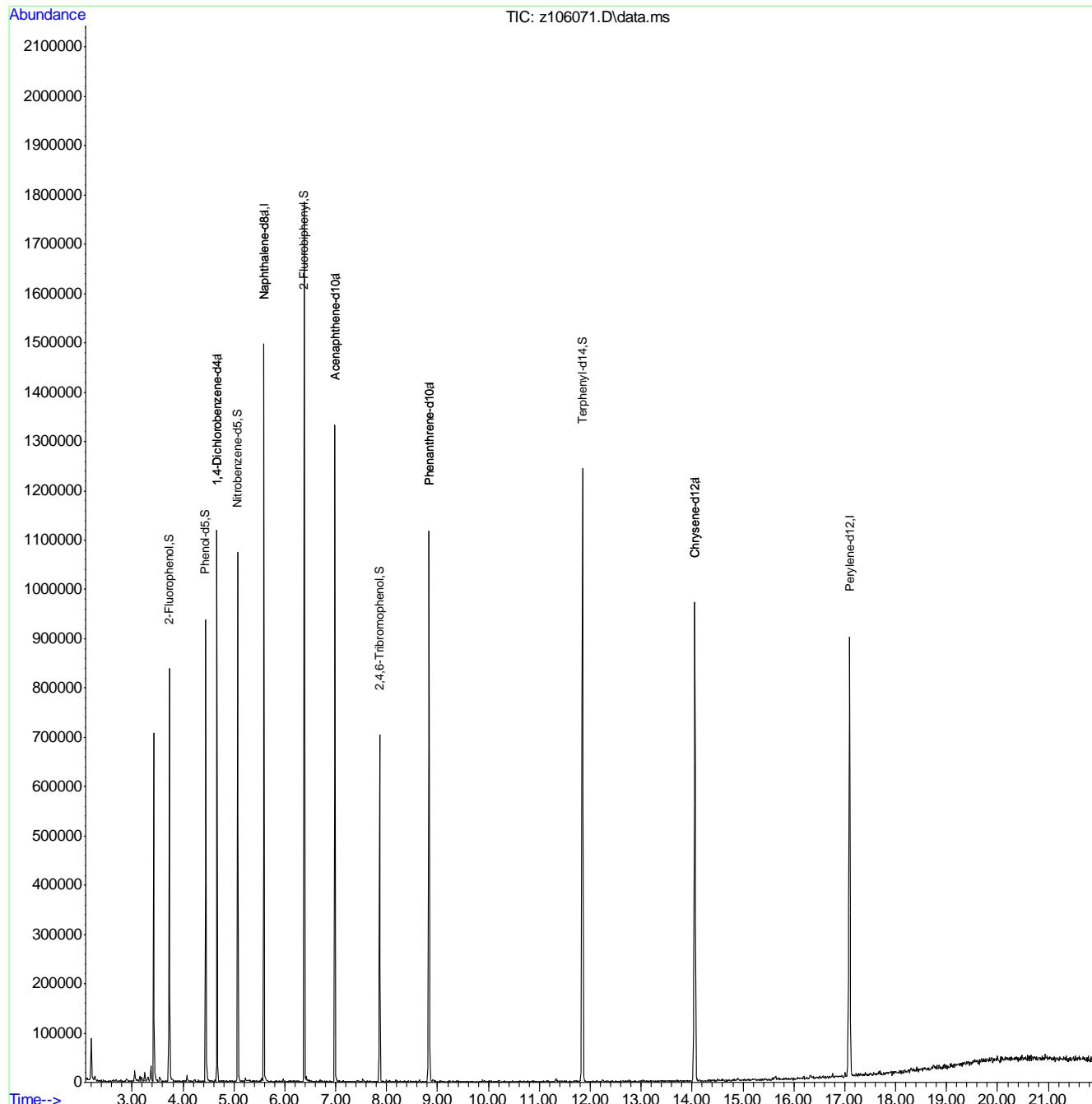
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.2.2
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\EZ5295\
 Data File : z106071.D
 Acq On : 13 Nov 2015 4:27 pm
 Operator : brittany
 Sample : op88822-mb1
 Misc : op88822,ez5295,30.0
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 16 13:38:50 2015
 Quant Method : C:\MSDCHEM\1\METHODS\MZ5278.M
 Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
 QLast Update : Fri Nov 13 16:31:41 2015
 Response via : Initial Calibration





Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA38018
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:00	MA38018-STD1	1		STDA
14:06	MA38018-STD2	1		STDB
14:12	ZZZZZZ	1		
14:18	ZZZZZZ	1		
14:24	MA38018-ICV1	1		
14:29	MA38018-ICB1	1		
14:35	MA38018-CCV1	1		
14:41	MA38018-CCB1	1		
14:47	MA38018-CRI1	1		
14:53	MA38018-CRID1	1		
14:59	MA38018-CRIA1	1		
15:05	MA38018-ICSA1	1		
15:11	MA38018-ICSAB1	1		
15:17	MA38018-HSTD1	1		
15:23	MA38018-HSTD2	1		
15:29	ZZZZZZ	1		
15:35	ZZZZZZ	1		
15:41	ZZZZZZ	1		
15:47	MA38018-CCV2	1		
15:53	MA38018-CCB2	1		
15:59	MA38018-CRID2	1		
16:05	ZZZZZZ	1		
16:11	ZZZZZZ	1		
16:16	ZZZZZZ	1		
16:22	ZZZZZZ	1		
16:28	ZZZZZZ	1		
16:34	ZZZZZZ	50		
16:40	ZZZZZZ	1		
16:46	ZZZZZZ	1		
16:52	MA38018-CCV3	1		
16:58	MA38018-CCB3	1		
17:04	ZZZZZZ	100		
17:10	MP90213-MB1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA38018
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
17:16	MP90213-B1	1		
17:22	MP90213-S1	1		
17:28	MP90213-S2	1		
17:33	JC8072-16	1		(sample used for QC only; not part of login JC7897)
17:39	MP90213-SD1	5		
17:45	MP90220-MB1	1		
17:51	MP90220-B1	1		
17:57	MA38018-CCV4	1		
18:03	MA38018-CCB4	1		
18:09	MP90220-S1	1		
18:14	MP90220-S2	1		
18:20	JC8139-19	1		(sample used for QC only; not part of login JC7897)
18:26	MP90220-SD1	5		
18:32	ZZZZZ	1		
18:38	ZZZZZ	1		
18:44	ZZZZZ	1		
18:50	ZZZZZ	1		
18:56	ZZZZZ	1		
19:02	MA38018-CCV5	1		
19:07	MA38018-CCB5	1		
19:14	MA38018-CRI2	1		
19:20	ZZZZZ	1		
19:26	ZZZZZ	1		
19:32	ZZZZZ	1		
19:38	ZZZZZ	1		
19:44	ZZZZZ	1		
19:50	ZZZZZ	1		
19:56	ZZZZZ	1		
20:01	ZZZZZ	1		
20:07	MA38018-CCV6	1		
20:13	MA38018-CCB6	1		
20:19	ZZZZZ	1		
20:25	ZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA38018
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:31	ZZZZZZ	1		
20:39	MP90219-MB1	1		
20:45	MP90219-B1	1		
20:51	MP90219-S1	1		
20:56	MP90219-S2	1		
21:02	JC8127-1A	1		(sample used for QC only; not part of login JC7897)
21:08	MP90219-SD1	5		
21:14	ZZZZZZ	1		
21:20	MA38018-CCV7	1		
21:25	MA38018-CCB7	1		
21:31	MA38018-CRI3	1		
21:37	MA38018-CRID3	1		
21:44	MA38018-CRIA2	1		
21:50	MA38018-ICSA2	1		
21:56	MA38018-ICSAB2	1		
22:01	MA38018-CCV8	1		
22:07	MA38018-CCB8	1		
22:13	ZZZZZZ	1		
22:19	ZZZZZZ	1		
22:25	ZZZZZZ	1		
22:31	ZZZZZZ	1		
22:37	ZZZZZZ	1		
22:43	ZZZZZZ	1		
22:48	ZZZZZZ	1		
22:54	ZZZZZZ	1		
23:00	ZZZZZZ	1		
23:06	MA38018-CCV9	1		
23:12	MA38018-CCB9	1		
23:18	ZZZZZZ	1		
23:24	ZZZZZZ	1		
23:30	ZZZZZZ	1		
23:36	ZZZZZZ	1		
23:41	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA38018
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:47	ZZZZZZ	1		
23:53	ZZZZZZ	1		
23:59	ZZZZZZ	1		
00:05	ZZZZZZ	1		
00:11	MA38018-CCV10	1		
00:17	MA38018-CCB10	1		
00:23	ZZZZZZ	1		
00:29	ZZZZZZ	1		
00:35	ZZZZZZ	1		
00:41	ZZZZZZ	1		
00:47	ZZZZZZ	1		
00:53	ZZZZZZ	1		
00:59	ZZZZZZ	1		
01:05	ZZZZZZ	1		
01:11	ZZZZZZ	1		
01:17	MA38018-CCV11	1		
01:23	MA38018-CCB11	1		
01:29	MP90218-MB1	1		
01:35	MP90218-B1	1		
01:40	MP90218-S1	1		
01:46	MP90218-S2	1		
01:52	JC8138-9	1		(sample used for QC only; not part of login JC7897)
01:58	MP90218-SD1	5		
02:04	ZZZZZZ	1		
02:10	ZZZZZZ	1		
02:15	ZZZZZZ	1		
02:21	MA38018-CCV12	1		
02:27	MA38018-CCB12	1		
02:33	ZZZZZZ	1		
02:39	ZZZZZZ	1		
02:45	ZZZZZZ	1		
02:51	ZZZZZZ	1		
02:57	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA38018
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
03:03	ZZZZZZ	1		
03:09	ZZZZZZ	1		
03:15	ZZZZZZ	1		
03:20	ZZZZZZ	1		
03:26	ZZZZZZ	1		
03:32	MA38018-CCV13	1		
03:38	MA38018-CCB13	1		
03:44	ZZZZZZ	1		
03:50	ZZZZZZ	1		
03:56	ZZZZZZ	1		
04:02	ZZZZZZ	1		
04:08	ZZZZZZ	1		
04:14	ZZZZZZ	1		
04:20	MA38018-CCV14	1		
04:25	MA38018-CCB14	1		
04:32	MA38018-CRI4	1		
04:38	MA38018-CRID4	1		
04:44	MA38018-CRIA3	1		
04:50	MA38018-ICSA3	1		
04:56	MA38018-ICSAB3	1		
05:01	MA38018-CCV15	1		
05:07	MA38018-CCB15	1		
05:13	JC7897-1	1		
05:19	JC7897-2	1		
05:25	JC7897-3	1		
-----> Last reportable sample/prep for job JC7897				
05:31	ZZZZZZ	1		
05:37	ZZZZZZ	1		
05:43	ZZZZZZ	1		
05:49	ZZZZZZ	1		
05:55	ZZZZZZ	1		
06:00	ZZZZZZ	1		
06:06	ZZZZZZ	1		
06:12	MA38018-CCV16	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA38018
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
06:18	MA38018-CCB16	1		
06:24	ZZZZZZ	1		
06:30	ZZZZZZ	1		
06:36	ZZZZZZ	1		
06:42	ZZZZZZ	1		
06:48	ZZZZZZ	1		
06:54	ZZZZZZ	1		
07:00	ZZZZZZ	1		
07:06	ZZZZZZ	1		
07:12	ZZZZZZ	1		
07:17	MA38018-CCV17	1		
07:23	MA38018-CCB17	1		
07:29	MA38018-CRI5	1		
07:35	MA38018-CRIA4	1		
07:41	MA38018-CCV18	1		
07:47	MA38018-CCB18	1		

-----> Last reportable CCB for job JC7897
Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP

Date Analyzed: 11/10/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA38018

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
14:00	MA38018-STD1	1443 R	65246 R	15425 R	3108 R
14:06	MA38018-STD2	1364	60445	14863	2686
14:12	ZZZZZZ	1407	62412	15145	2823
14:18	ZZZZZZ	1405	63481	15009	3009
14:24	MA38018-ICV1	1391	62106	15124	2808
14:29	MA38018-ICB1	1456	65481	15558	3139
14:35	MA38018-CCV1	1378	61543	14951	2791
14:41	MA38018-CCB1	1420	63927	15093	3064
14:47	MA38018-CRI1	1437	64565	15345	3077
14:53	MA38018-CRID1	No results reported for the elements associated with this internal standard.			
14:59	MA38018-CRIAl	1461	65584	15406	3130
15:05	MA38018-ICSA1	1289	57145	14471	2447
15:11	MA38018-ICSAB1	1291	57515	14536	2453
15:17	MA38018-HSTD1	1438	64823	15846	3061
15:23	MA38018-HSTD2	1316	58942	14750	2504
15:29	ZZZZZZ	1404	63657	15067	3023
15:35	ZZZZZZ	1442	65640	15354	3137
15:41	ZZZZZZ	1463	65958	15383	3155
15:47	MA38018-CCV2	1415	63459	15271	2860
15:53	MA38018-CCB2	1459	65484	15290	3140
15:59	MA38018-CRID2	1455	65842	15300	3141
16:05	ZZZZZZ	1440	65127	15404	3128
16:11	ZZZZZZ	1422	64075	15383	2939
16:16	ZZZZZZ	1319	59029	14542	2635
16:22	ZZZZZZ	1400	63056	14766	3013
16:28	ZZZZZZ	1312	58962	14581	2615
16:34	ZZZZZZ	1409	63464	15113	2984
16:40	ZZZZZZ	1335	59989	14847	2671
16:46	ZZZZZZ	1417	64366	15492	3059
16:52	MA38018-CCV3	1413	63720	15359	2850
16:58	MA38018-CCB3	1439	64765	15128	3106
17:04	ZZZZZZ	1462	65317	15420	3123
17:10	MP90213-MB1	1451	65499	15387	3140

INTERNAL STANDARD SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP

Date Analyzed: 11/10/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA38018

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
17:16	MP90213-B1	1421	63570	15127	2926
17:22	MP90213-S1	1411	62858	15265	2794
17:28	MP90213-S2	1415	63157	15288	2804
17:33	JC8072-16	1432	63820	15361	2896
17:39	MP90213-SD1	1438	64616	15228	3041
17:45	MP90220-MB1	1432	65024	15287	3092
17:51	MP90220-B1	1413	63537	15201	2910
17:57	MA38018-CCV4	1414	63487	15286	2843
18:03	MA38018-CCB4	1451	66187	15379	3129
18:09	MP90220-S1	1405	63331	15312	2816
18:14	MP90220-S2	1414	63481	15384	2857
18:20	JC8139-19	1456	64275	15655	3015
18:26	MP90220-SD1	1450	65432	15395	3090
18:32	ZZZZZ	1453	65237	15628	2978
18:38	ZZZZZ	1422	63870	15274	2931
18:44	ZZZZZ	1419	63725	15434	2906
18:50	ZZZZZ	1417	63081	15263	2886
18:56	ZZZZZ	1428	63287	15808	2894
19:02	MA38018-CCV5	1403	62284	15103	2802
19:07	MA38018-CCB5	1458	64694	15282	3060
19:14	MA38018-CRI2	1410	62594	14895	2954
19:20	ZZZZZ	1447	63541	15323	2920
19:26	ZZZZZ	1450	63530	15302	2916
19:32	ZZZZZ	1461	64298	15435	2942
19:38	ZZZZZ	1457	64158	15402	2935
19:44	ZZZZZ	1456	64454	15635	2874
19:50	ZZZZZ	1462	64985	15746	2901
19:56	ZZZZZ	1456	63761	15573	2859
20:01	ZZZZZ	1490	63700	15684	2875
20:07	MA38018-CCV6	1448	61289	15180	2803
20:13	MA38018-CCB6	1482	63086	15209	2960
20:19	ZZZZZ	1486	63036	15432	2853
20:25	ZZZZZ	1488	62974	15672	2865

INTERNAL STANDARD SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP

Date Analyzed: 11/10/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA38018

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
20:31	ZZZZZZ	1495	62913	15707	2865
20:39	MP90219-MB1	1505	63109	15316	2971
20:45	MP90219-B1	1497	61260	15133	2870
20:51	MP90219-S1	1517	61907	15557	2803
20:56	MP90219-S2	1501	61959	15438	2789
21:02	JC8127-1A	1513	63306	15497	2906
21:08	MP90219-SD1	1506	64010	15307	3045
21:14	ZZZZZZ	1481	63805	15400	2921
21:20	MA38018-CCV7	1458	62949	15112	2883
21:25	MA38018-CCB7	1514	63438	15046	3145
21:31	MA38018-CRI3	1485	63958	15099	3075
21:37	MA38018-CRID3	1492	63943	15182	3099
21:44	MA38018-CRIA2	1491	63732	15178	3086
21:50	MA38018-ICSA2	1326	56907	14422	2441
21:56	MA38018-ICSAB2	1335	57234	14474	2458
22:01	MA38018-CCV8	1447	62039	14934	2836
22:07	MA38018-CCB8	1500	64419	15107	3139
22:13	ZZZZZZ	1512	65159	15514	2976
22:19	ZZZZZZ	1510	64857	15479	2960
22:25	ZZZZZZ	1513	65040	15572	2966
22:31	ZZZZZZ	1516	65183	15543	2971
22:37	ZZZZZZ	1519	64756	15436	2977
22:43	ZZZZZZ	1520	64802	15505	2980
22:48	ZZZZZZ	1510	65069	15539	2962
22:54	ZZZZZZ	1522	65568	15659	3002
23:00	ZZZZZZ	1527	65589	15640	3017
23:06	MA38018-CCV9	1463	62217	14961	2866
23:12	MA38018-CCB9	1524	65224	15308	3207
23:18	ZZZZZZ	1537	65694	15633	3056
23:24	ZZZZZZ	1528	65407	15564	3003
23:30	ZZZZZZ	1533	65499	15635	3024
23:36	ZZZZZZ	1516	64530	15706	2988
23:41	ZZZZZZ	1512	64718	15515	2972

INTERNAL STANDARD SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP

Date Analyzed: 11/10/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA38018

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:47	ZZZZZZ	1518	65051	15692	2953
23:53	ZZZZZZ	1515	64692	15537	2985
23:59	ZZZZZZ	1507	64889	15652	2963
00:05	ZZZZZZ	1507	64560	15696	2915
00:11	MA38018-CCV10	1461	61669	15094	2835
00:17	MA38018-CCB10	1499	63122	15047	3075
00:23	ZZZZZZ	1497	62916	15041	3066
00:29	ZZZZZZ	1507	63590	15140	3085
00:35	ZZZZZZ	1505	63403	15020	3080
00:41	ZZZZZZ	1512	63005	14991	3092
00:47	ZZZZZZ	1526	63320	15014	3092
00:53	ZZZZZZ	1556	63357	14852	3125
00:59	ZZZZZZ	1595	63657	14830	3157
01:05	ZZZZZZ	1591	61037	15051	2893
01:11	ZZZZZZ	1448	58567	14227	2730
01:17	MA38018-CCV11	1475	59906	14489	2797
01:23	MA38018-CCB11	1501	60740	14594	3000
01:29	MP90218-MB1	1485	60813	14644	2984
01:35	MP90218-B1	1429	58857	14352	2802
01:40	MP90218-S1	1451	59963	14477	2758
01:46	MP90218-S2	1514	60625	14532	2834
01:52	JC8138-9	1611	64691	15263	3054
01:58	MP90218-SD1	1662	66199	15124	3254
02:04	ZZZZZZ	1670	67282	15263	3213
02:10	ZZZZZZ	1737	69816	15427	3312
02:15	ZZZZZZ	1665	66091	15324	3123
02:21	MA38018-CCV12	1598	64594	15030	2981
02:27	MA38018-CCB12	1608	64012	15004	3139
02:33	ZZZZZZ	1502	63954	15261	2906
02:39	ZZZZZZ	1463	61301	15064	2846
02:45	ZZZZZZ	1470	62531	15067	2893
02:51	ZZZZZZ	1472	62292	15170	2871
02:57	ZZZZZZ	1484	62475	15229	2875

INTERNAL STANDARD SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP

Date Analyzed: 11/10/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA38018

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
03:03	ZZZZZZ	1480	62563	15275	2882
03:09	ZZZZZZ	1482	62511	15337	2867
03:15	ZZZZZZ	1487	62599	15225	2911
03:20	ZZZZZZ	1490	62463	15174	2912
03:26	ZZZZZZ	1511	62019	15187	2893
03:32	MA38018-CCV13	1461	60094	14853	2771
03:38	MA38018-CCB13	1462	59681	14772	2878
03:44	ZZZZZZ	1474	59084	14890	2829
03:50	ZZZZZZ	1488	59748	15034	2847
03:56	ZZZZZZ	1486	59598	14894	2832
04:02	ZZZZZZ	1492	59861	14876	2856
04:08	ZZZZZZ	1481	59393	14944	2838
04:14	ZZZZZZ	1484	60059	15019	2852
04:20	MA38018-CCV14	1441	58260	14524	2741
04:25	MA38018-CCB14	1480	59804	14715	2900
04:32	MA38018-CRI4	1485	59427	14565	2891
04:38	MA38018-CRID4	1510	60040	14493	2930
04:44	MA38018-CRIA3	1506	60071	14634	2925
04:50	MA38018-ICSA3	1350	53860	13883	2454
04:56	MA38018-ICSAB3	1349	53966	13931	2456
05:01	MA38018-CCV15	1461	58376	14554	2762
05:07	MA38018-CCB15	1495	59539	14648	2899
05:13	JC7897-1	1542	61070	15422	2794
05:19	JC7897-2	1490	59093	14758	2797
05:25	JC7897-3	1490	59200	14901	2797
05:31	ZZZZZZ	1468	59187	14774	2768
05:37	ZZZZZZ	1454	57945	14679	2723
05:43	ZZZZZZ	1457	58767	14705	2757
05:49	ZZZZZZ	1474	58754	14732	2778
05:55	ZZZZZZ	1463	58496	14626	2821
06:00	ZZZZZZ	1454	59064	14670	2822
06:06	ZZZZZZ	1456	58439	14766	2752
06:12	MA38018-CCV16	1445	58198	14557	2739

INTERNAL STANDARD SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP

Date Analyzed: 11/10/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA38018

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
06:18	MA38018-CCB16	1484	59665	14690	2897
06:24	ZZZZZZ	1449	58767	14779	2774
06:30	ZZZZZZ	1450	58263	14681	2815
06:36	ZZZZZZ	1453	58533	14609	2818
06:42	ZZZZZZ	1447	57800	14698	2736
06:48	ZZZZZZ	1443	57823	14698	2731
06:54	ZZZZZZ	1434	57412	14618	2718
07:00	ZZZZZZ	1432	57472	14579	2715
07:06	ZZZZZZ	1432	56958	14575	2713
07:12	ZZZZZZ	1444	57918	15021	2665
07:17	MA38018-CCV17	1413	56338	14468	2687
07:23	MA38018-CCB17	1457	57881	14552	2815
07:29	MA38018-CRI5	1447	57660	14550	2802
07:35	MA38018-CRIA4	1451	57971	14501	2815
07:41	MA38018-CCV18	1410	56345	14376	2682
07:47	MA38018-CCB18	1454	58095	14471	2818

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

10.1.1
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Metal	Sample ID:	Time: RL	14:29 ICB1		14:41 CCB1		15:53 CCB2		16:58 CCB3		
			raw	final	raw	final	raw	final	raw	final	
Aluminum		200	20	anr							
Antimony		6.0	1.6	anr							
Arsenic		3.0	1.4	anr							
Barium		200	.4	anr							
Beryllium		1.0	.2	anr							
Bismuth		20	1.5								
Boron		100	.9								
Cadmium		3.0	.4	anr							
Calcium		5000	25	anr							
Chromium		10	.8	anr							
Cobalt		50	.3	0.20	<50	0.30	<50	0.10	<50	0.0	<50
Copper		10	.8	anr							
Iron		100	10	anr							
Lead		3.0	1	-0.10	<3.0	0.30	<3.0	-0.60	<3.0	-1.0	<3.0
Lithium		20	1.9								
Magnesium		5000	44	anr							
Manganese		15	.2	anr							
Molybdenum		20	.4								
Nickel		10	.5	0.60	<10	0.30	<10	0.0	<10	1.5	<10
Palladium		50	1.8								
Potassium		10000	48	anr							
Selenium		10	2.7	anr							
Silicon		200	8.9								
Silver		10	.8	anr							
Sodium		10000	29	anr							
Sulfur		50	4.4								
Strontium		10	.2								
Thallium		2.0	1.5	anr							
Tin		10	1								
Titanium		10	.6								
Tungsten		50	2.8								
Vanadium		50	.5	0.0	<50	0.10	<50	0.20	<50	0.30	<50
Zinc		20	2.3	0.30	<20	0.10	<20	-0.20	<20	0.10	<20

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Time:	14:29	14:41	15:53	16:58
Sample ID:	ICB1	CCB1	CCB2	CCB3
Metal	RL	IDL	raw	final

Zirconium 10 .4

(*) Outside of QC limits
(anr) Analyte not requested

10.1.2
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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Metal	Sample ID:	Time: RL	18:03 CCB4		19:07 CCB5		20:13 CCB6		21:25 CCB7	
			raw	final	raw	final	raw	final	raw	final
Aluminum		200	20	anr						
Antimony		6.0	1.6	anr						
Arsenic		3.0	1.4	anr						
Barium		200	.4	anr						
Beryllium		1.0	.2	anr						
Bismuth		20	1.5							
Boron		100	.9							
Cadmium		3.0	.4	anr						
Calcium		5000	25	anr						
Chromium		10	.8	anr						
Cobalt		50	.3	-0.10	<50	0.10	<50	0.0	<50	0.0
Copper		10	.8	anr						
Iron		100	10	anr						
Lead		3.0	1	-0.90	<3.0	0.10	<3.0	-0.60	<3.0	1.0
Lithium		20	1.9							
Magnesium		5000	44	anr						
Manganese		15	.2	anr						
Molybdenum		20	.4							
Nickel		10	.5	0.60	<10	0.20	<10	0.40	<10	0.20
Palladium		50	1.8							
Potassium		10000	48	anr						
Selenium		10	2.7	anr						
Silicon		200	8.9							
Silver		10	.8	anr						
Sodium		10000	29	anr						
Sulfur		50	4.4							
Strontium		10	.2							
Thallium		2.0	1.5	anr						
Tin		10	1							
Titanium		10	.6							
Tungsten		50	2.8							
Vanadium		50	.5	0.50	<50	-0.20	<50	0.40	<50	0.10
Zinc		20	2.3	0.20	<20	0.10	<20	0.40	<20	0.30

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Time: Sample ID:	18:03 CCB4	19:07 CCB5	20:13 CCB6	21:25 CCB7						
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final

Zirconium 10 .4

(*) Outside of QC limits
(anr) Analyte not requested

10.1.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Metal	Time: Sample ID: RL	IDL	22:07 CCB8		23:12 CCB9		00:17 CCB10		01:23 CCB11	
			raw	final	raw	final	raw	final	raw	final
Aluminum	200	20	anr							
Antimony	6.0	1.6	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.4	anr							
Beryllium	1.0	.2	anr							
Bismuth	20	1.5								
Boron	100	.9								
Cadmium	3.0	.4	anr							
Calcium	5000	25	anr							
Chromium	10	.8	anr							
Cobalt	50	.3	0.0	<50	-0.20	<50	0.10	<50	0.10	<50
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1	0.0	<3.0	0.60	<3.0	0.40	<3.0	0.50	<3.0
Lithium	20	1.9								
Magnesium	5000	44	anr							
Manganese	15	.2	anr							
Molybdenum	20	.4								
Nickel	10	.5	1.3	<10	0.50	<10	0.40	<10	0.30	<10
Palladium	50	1.8								
Potassium	10000	48	anr							
Selenium	10	2.7	anr							
Silicon	200	8.9								
Silver	10	.8	anr							
Sodium	10000	29	anr							
Sulfur	50	4.4								
Strontium	10	.2								
Thallium	2.0	1.5	anr							
Tin	10	1								
Titanium	10	.6								
Tungsten	50	2.8								
Vanadium	50	.5	0.30	<50	0.0	<50	0.20	<50	0.20	<50
Zinc	20	2.3	0.20	<20	0.50	<20	0.10	<20	0.20	<20

10.1.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Time: Sample ID:	22:07 CCB8	23:12 CCB9	00:17 CCB10	01:23 CCB11						
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final

Zirconium 10 .4

(*) Outside of QC limits
(anr) Analyte not requested

10.1.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Metal	Time: Sample ID: RL	02:27 CCB12		03:38 CCB13		04:25 CCB14		05:07 CCB15	
		raw	final	raw	final	raw	final	raw	final
Aluminum	200	20	anr						
Antimony	6.0	1.6	anr						
Arsenic	3.0	1.4	anr						
Barium	200	.4	anr						
Beryllium	1.0	.2	anr						
Bismuth	20	1.5							
Boron	100	.9							
Cadmium	3.0	.4	anr						
Calcium	5000	25	anr						
Chromium	10	.8	anr						
Cobalt	50	.3	0.20	<50	0.40	<50	0.10	<50	0.10
Copper	10	.8	anr						
Iron	100	10	anr						
Lead	3.0	1	-0.50	<3.0	0.30	<3.0	0.30	<3.0	0.60
Lithium	20	1.9							
Magnesium	5000	44	anr						
Manganese	15	.2	anr						
Molybdenum	20	.4							
Nickel	10	.5	0.50	<10	0.60	<10	0.0	<10	0.0
Palladium	50	1.8							
Potassium	10000	48	anr						
Selenium	10	2.7	anr						
Silicon	200	8.9							
Silver	10	.8	anr						
Sodium	10000	29	anr						
Sulfur	50	4.4							
Strontium	10	.2							
Thallium	2.0	1.5	anr						
Tin	10	1							
Titanium	10	.6							
Tungsten	50	2.8							
Vanadium	50	.5	0.20	<50	0.0	<50	0.30	<50	0.10
Zinc	20	2.3	0.60	<20	0.40	<20	0.20	<20	0.60

10.1.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Time: Sample ID:	02:27 CCB12	03:38 CCB13	04:25 CCB14	05:07 CCB15						
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final

Zirconium 10 .4

(*) Outside of QC limits
(anr) Analyte not requested

10.1.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Metal	Time: Sample ID: RL	06:18 CCB16		07:23 CCB17		07:47 CCB18		final
		raw	final	raw	final	raw	final	
Aluminum	200	20	anr					
Antimony	6.0	1.6	anr					
Arsenic	3.0	1.4	anr					
Barium	200	.4	anr					
Beryllium	1.0	.2	anr					
Bismuth	20	1.5						
Boron	100	.9						
Cadmium	3.0	.4	anr					
Calcium	5000	25	anr					
Chromium	10	.8	anr					
Cobalt	50	.3	-0.20	<50	0.0	<50	1.5	<50
Copper	10	.8	anr					
Iron	100	10	anr					
Lead	3.0	1	0.70	<3.0	0.80	<3.0	0.80	<3.0
Lithium	20	1.9						
Magnesium	5000	44	anr					
Manganese	15	.2	anr					
Molybdenum	20	.4						
Nickel	10	.5	0.20	<10	-0.50	<10	1.4	<10
Palladium	50	1.8						
Potassium	10000	48	anr					
Selenium	10	2.7	anr					
Silicon	200	8.9						
Silver	10	.8	anr					
Sodium	10000	29	anr					
Sulfur	50	4.4						
Strontium	10	.2						
Thallium	2.0	1.5	anr					
Tin	10	1						
Titanium	10	.6						
Tungsten	50	2.8						
Vanadium	50	.5	0.20	<50	0.10	<50	1.1	<50
Zinc	20	2.3	0.70	<20	0.40	<20	1.8	<20

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38018 Units: ug/l

Time: Sample ID:	06:18 CCB16	07:23 CCB17	07:47 CCB18					
Metal	RL	IDL	raw	final	raw	final	raw	final

Zirconium 10 .4

(*) Outside of QC limits
(anr) Analyte not requested

10.1.2
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Metal	Time: Sample ID: True	14:24 ICV1 Results		CCV True	14:35 CCV1 Results		CCV True	15:47 CCV2 Results	
		% Rec			% Rec			% Rec	
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	2000	100.0	2000	2020	101.0	2000	1930	96.5
Copper	anr								
Iron	anr								
Lead	2000	2010	100.5	2000	2020	101.0	2000	1950	97.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2000	2010	100.5	2000	2020	101.0	2000	1950	97.5
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	2010	100.5	2000	2030	101.5	2000	1940	97.0
Zinc	2000	2040	102.0	2000	2050	102.5	2000	1950	97.5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Time:	14:24	14:35	15:47			
Sample ID:	ICV	CCV1	CCV2			
Metal	True	Results % Rec	True	Results % Rec	True	Results % Rec

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Metal	Time: Sample ID: Metal	16:52 CCV True		17:57 CCV True		19:02 CCV True			
		Results	% Rec	Results	% Rec	Results	% Rec		
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	1950	97.5	2000	1940	97.0	2000	1980	99.0
Copper	anr								
Iron	anr								
Lead	2000	1980	99.0	2000	1980	99.0	2000	2010	100.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2000	1960	98.0	2000	1970	98.5	2000	2010	100.5
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	1920	96.0	2000	1910	95.5	2000	1950	97.5
Zinc	2000	1920	96.0	2000	1910	95.5	2000	1950	97.5

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Time:	16:52	17:57	19:02									
Metal	Sample ID:	Results	CCV	CCV3	True	CCV4	Results	CCV	CCV5	True	Results	% Rec

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP
QC Limits: 90 to 110 % Recovery

Date Analyzed: 11/10/15
Run ID: MA38018

Methods: EPA 200.7, SW846 6010C
Units: ug/l

Metal	Time: Sample ID: Metal	20:07 CCV True	20:07 CCV6 Results	% Rec	21:20 CCV True	21:20 CCV7 Results	% Rec	22:01 CCV True	22:01 CCV8 Results	% Rec
Aluminum	anr									
Antimony	anr									
Arsenic	anr									
Barium	anr									
Beryllium	anr									
Bismuth										
Boron										
Cadmium	anr									
Calcium	anr									
Chromium	anr									
Cobalt	2000	2050	102.5		2000	1990	99.5	2000	2010	100.5
Copper	anr									
Iron	anr									
Lead	2000	2070	103.5		2000	2060	103.0	2000	2070	103.5
Lithium										
Magnesium	anr									
Manganese	anr									
Molybdenum										
Nickel	2000	2100	105.0		2000	2020	101.0	2000	2040	102.0
Palladium										
Potassium	anr									
Selenium	anr									
Silicon										
Silver	anr									
Sodium	anr									
Sulfur										
Strontium										
Thallium	anr									
Tin										
Titanium										
Tungsten										
Vanadium	2000	2000	100.0		2000	1940	97.0	2000	1940	97.0
Zinc	2000	2040	102.0		2000	1880	94.0	2000	1870	93.5

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Time:	20:07	21:20	22:01								
Metal	Sample ID:	Results	CCV	True	CCV6	CCV7	CCV8	Results	True	% Rec	% Rec
Zirconium											

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP
QC Limits: 90 to 110 % Recovery

Date Analyzed: 11/10/15
Run ID: MA38018

Methods: EPA 200.7, SW846 6010C
Units: ug/l

Metal	Time: Sample ID: Metal	23:06 CCV True	Results	% Rec	CCV True	00:11 CCV10 Results	% Rec	CCV True	01:17 CCV11 Results	% Rec
Aluminum	anr									
Antimony	anr									
Arsenic	anr									
Barium	anr									
Beryllium	anr									
Bismuth										
Boron										
Cadmium	anr									
Calcium	anr									
Chromium	anr									
Cobalt	2000	2000	100.0		2000	1980	99.0	2000	2060	103.0
Copper	anr									
Iron	anr									
Lead	2000	2090	104.5		2000	2050	102.5	2000	2110	105.5
Lithium										
Magnesium	anr									
Manganese	anr									
Molybdenum										
Nickel	2000	2040	102.0		2000	2030	101.5	2000	2110	105.5
Palladium										
Potassium	anr									
Selenium	anr									
Silicon										
Silver	anr									
Sodium	anr									
Sulfur										
Strontium										
Thallium	anr									
Tin										
Titanium										
Tungsten										
Vanadium	2000	1940	97.0		2000	1910	95.5	2000	1980	99.0
Zinc	2000	1850	92.5		2000	1830	91.5	2000	1910	95.5

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Time:	23:06	00:11	01:17								
Metal	Sample ID:	Results	CCV	True	CCV9	CCV10	CCV11	Results	True	Results	% Rec

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Metal	Time: Sample ID: True	02:21 CCV12 Results		03:32 CCV13 Results		04:20 CCV14 Results		% Rec
		CCV	% Rec	CCV	% Rec	CCV	% Rec	
Aluminum	anr							
Antimony	anr							
Arsenic	anr							
Barium	anr							
Beryllium	anr							
Bismuth								
Boron								
Cadmium	anr							
Calcium	anr							
Chromium	anr							
Cobalt	2000	2070	103.5	2000	2060	103.0	2000	2070
Copper	anr							
Iron	anr							
Lead	2000	2120	106.0	2000	2100	105.0	2000	2110
Lithium								
Magnesium	anr							
Manganese	anr							
Molybdenum								
Nickel	2000	2120	106.0	2000	2120	106.0	2000	2130
Palladium								
Potassium	anr							
Selenium	anr							
Silicon								
Silver	anr							
Sodium	anr							
Sulfur								
Strontium								
Thallium	anr							
Tin								
Titanium								
Tungsten								
Vanadium	2000	1980	99.0	2000	1980	99.0	2000	2000
Zinc	2000	1960	98.0	2000	1940	97.0	2000	1980

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Time:	02:21	03:32	04:20								
Metal	Sample ID:	Results	CCV	True	CCV12	CCV13	CCV14	Results	True	Results	% Rec
Zirconium											

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Metal	Time: Sample ID: True	05:01 CCV15		06:12 CCV16		07:17 CCV17		Results True	% Rec
		CCV	Results	CCV	Results	CCV	Results		
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	2090	104.5	2000	2110	105.5	2000	2120	106.0
Copper	anr								
Iron	anr								
Lead	2000	2120	106.0	2000	2150	107.5	2000	2160	108.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2000	2150	107.5	2000	2170	108.5	2000	2180	109.0
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	2010	100.5	2000	2040	102.0	2000	2060	103.0
Zinc	2000	2000	100.0	2000	2040	102.0	2000	2060	103.0

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38018 Units: ug/l

Time:	05:01	06:12	07:17								
Metal	Sample ID:	Results	CCV	True	CCV15	CCV16	CCV17	Results	True	Results	% Rec
Zirconium											

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP
QC Limits: 90 to 110 % Recovery

Date Analyzed: 11/10/15
Run ID: MA38018

Methods: EPA 200.7, SW846 6010C
Units: ug/l

Metal	Time: Sample ID: True	07:41 CCV Results	CCV18 % Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	2000	2140	107.0
Copper	anr		
Iron	anr		
Lead	2000	2160	108.0
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	2000	2200	110.0
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	2000	2080	104.0
Zinc	2000	2080	104.0

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 11/10/15

Run ID: MA38018

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Time:	07:41
Sample ID:	CCV
Metal	True

Results % Rec

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

HIGH STANDARD CHECK SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP
QC Limits: 90 to 110 % RecoveryDate Analyzed: 11/10/15
Run ID: MA38018Methods: EPA 200.7, SW846 6010C
Units: ug/l

Time:	15:17		15:23			
Sample ID:	HSTD		HSTD	HSTD2		
Metal	True	Results	% Rec	True	Results	% Rec

Aluminum

Antimony anr

Arsenic anr

Barium anr

Beryllium anr

Bismuth

Boron

Cadmium anr

Calcium

Chromium anr

Cobalt 5000 4900 98.0

Copper anr

Iron

Lead 5000 4910 98.2

Lithium

Magnesium

Manganese anr

Molybdenum

Nickel 5000 4930 98.6

Palladium

Potassium

Selenium anr

Silicon

Silver anr

Sodium

Sulfur

Strontium

Thallium anr

Tin

Titanium

Tungsten

Vanadium 5000 5020 100.4

Zinc 5000 5100 102.0

10.1.4
10

HIGH STANDARD CHECK SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 11/10/15

Run ID: MA38018

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Time:	15:17	15:23				
Sample ID:	HSTD	HSTD1	HSTD	HSTD2		
Metal	True	Results	% Rec	True	Results	% Rec

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

10.1.4
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38018 Units: ug/l

Metal	Time:		CRI	CRIA	CRID	14:47		14:59		15:59	
	Sample ID:	True				CRI1	Results	% Rec	CRIAL	Results	% Rec
Aluminum	200	500	100			anr					
Antimony	6.0	20		3.0		anr					
Arsenic	8.0	20		3.0		anr					
Barium	200			4.0		anr					
Beryllium	2.0			1.0		anr					
Bismuth	20										
Boron	100			10							
Cadmium	3.0			1.0		anr					
Calcium	5000	2000	1000			anr					
Chromium	10			2.0		anr					
Cobalt	50			3.0	49.3	98.6				2.9	96.7
Copper	10			2.0		anr					
Iron	100	500				anr					
Lead	3.0	20	2.5	2.5		83.3	19.9	99.5	2.7	108.0	
Lithium	20										
Magnesium	5000	2000	100			anr					
Manganese	15			3.0		anr					
Molybdenum	20										
Nickel	10			4.0	10.3	103.0				4.3	107.5
Palladium	50										
Potassium	5000		2000			anr					
Selenium	10	20	5.0			anr					
Silicon	200										
Silver	5.0			2.0		anr					
Sodium	5000		1000			anr					
Sulfur	50										
Strontium	10										
Thallium	10			2.0		anr					
Tin	10										
Titanium	10										
Tungsten	50										
Vanadium	50			2.0	50.6	101.2				1.9	95.0
Zinc	20			10	20.4	102.0				10.3	103.0

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PAFile ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38018 Units: ug/l

Metal	Time:		14:47		14:59		15:59				
	Sample ID:	Metal	CRI	CRIA	CRID	CRI1	CRIAL	CRID2			
Zirconium	True	True	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec

Zirconium 10

(*) Outside of QC limits
(anr) Analyte not requested10.1.5
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38018 Units: ug/l

Metal	Time:			19:14		21:31		21:37			
	Sample ID:	CRI	CRIA	CRID	CRI2	Results	% Rec	CRI3	CRID3	Results	% Rec
Aluminum	200	500	100	anr							
Antimony	6.0	20	3.0	anr							
Arsenic	8.0	20	3.0	anr							
Barium	200		4.0	anr							
Beryllium	2.0		1.0	anr							
Bismuth	20										
Boron	100		10								
Cadmium	3.0		1.0	anr							
Calcium	5000	2000	1000	anr							
Chromium	10		2.0	anr							
Cobalt	50		3.0	48.8	97.6	48.3	96.6	3.2	106.7		
Copper	10		2.0	anr							
Iron	100	500		anr							
Lead	3.0	20	2.5	2.9	96.7	3.5	116.7	2.0	80.0		
Lithium	20										
Magnesium	5000	2000	100	anr							
Manganese	15		3.0	anr							
Molybdenum	20										
Nickel	10		4.0	10.0	100.0	9.2	92.0	4.2	105.0		
Palladium	50										
Potassium	5000		2000	anr							
Selenium	10	20	5.0	anr							
Silicon	200										
Silver	5.0		2.0	anr							
Sodium	5000		1000	anr							
Sulfur	50										
Strontium	10										
Thallium	10		2.0	anr							
Tin	10										
Titanium	10										
Tungsten	50										
Vanadium	50		2.0	48.7	97.4	47.0	94.0	2.2	110.0		
Zinc	20		10	20.1	100.5	19.1	95.5	10.2	102.0		

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38018 Units: ug/l

Metal	Time:		19:14		21:31		21:37	
	Sample ID:	Metal	CRI	CRIA	CRID	CRI2	CRI3	CRID3
Zirconium	True	True	True	True	Results	% Rec	Results	% Rec

Zirconium 10

(*) Outside of QC limits
(anr) Analyte not requested

10.1.5
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38018 Units: ug/l

Metal	Time:		CRI	CRIA	CRID	21:44		04:32		04:38	
	Sample ID:	True				CRIA2	Results	% Rec	CRI4	Results	% Rec
Aluminum	200	500	100			anr					
Antimony	6.0	20		3.0		anr					
Arsenic	8.0	20		3.0		anr					
Barium	200			4.0							
Beryllium	2.0			1.0							
Bismuth	20										
Boron	100			10							
Cadmium	3.0			1.0							
Calcium	5000	2000	1000			anr					
Chromium	10			2.0							
Cobalt	50			3.0				51.2	102.4	3.0	100.0
Copper	10			2.0							
Iron	100	500				anr					
Lead	3.0	20	2.5	21.8		109.0	4.8		160.0*(a	2.3	92.0
Lithium	20										
Magnesium	5000	2000	100			anr					
Manganese	15			3.0							
Molybdenum	20										
Nickel	10			4.0				11.0	110.0	4.9	122.5
Palladium	50										
Potassium	5000			2000							
Selenium	10	20	5.0			anr					
Silicon	200										
Silver	5.0			2.0							
Sodium	5000			1000							
Sulfur	50										
Strontium	10										
Thallium	10			2.0							
Tin	10										
Titanium	10										
Tungsten	50										
Vanadium	50			2.0				48.9	97.8	1.7	85.0
Zinc	20			10				20.4	102.0	11.0	110.0

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38018 Units: ug/l

Time:	21:44			04:32			04:38					
Sample ID:	CRI	CRIA	CRID	CRIA2	Results	% Rec	CRI4	Results	% Rec	CRID4	Results	% Rec
Metal	True	True	True									

Zirconium 10

(*) Outside of QC limits
(anr) Analyte not requested

(a) No AQ samples reported for this element in the area bracketed by this QC.

10.1.5
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38018 Units: ug/l

Metal	Time:	CRI	CRIA	CRID	04:44		07:29		07:35	
	Sample ID:	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100		anr					
Antimony	6.0	20	3.0		anr					
Arsenic	8.0	20	3.0		anr					
Barium	200			4.0						
Beryllium	2.0			1.0						
Bismuth	20									
Boron	100			10						
Cadmium	3.0			1.0						
Calcium	5000	2000	1000		anr					
Chromium	10			2.0						
Cobalt	50			3.0			51.9		103.8	
Copper	10			2.0						
Iron	100	500			anr					
Lead	3.0	20	2.5	22.2		111.0	5.5	183.3*(a)	21.0	105.0
Lithium	20									
Magnesium	5000	2000	100		anr					
Manganese	15			3.0						
Molybdenum	20									
Nickel	10			4.0			10.4		104.0	
Palladium	50									
Potassium	5000			2000						
Selenium	10	20	5.0		anr					
Silicon	200									
Silver	5.0			2.0						
Sodium	5000			1000						
Sulfur	50									
Strontium	10									
Thallium	10			2.0						
Tin	10									
Titanium	10									
Tungsten	50									
Vanadium	50			2.0			50.4		100.8	
Zinc	20			10			21.1		105.5	

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38018 Units: ug/l

Time:			04:44			07:29			07:35			
Sample ID:	CRI	CRIA	CRID	CRIA3	Results	% Rec	CRI5	Results	% Rec	CRIA4	Results	% Rec
Metal	True	True	True									

Zirconium 10

(*) Outside of QC limits
(anr) Analyte not requested

(a) No AQ samples reported for this element in the area bracketed by this QC.

10.1.5
10

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JC7897
 Account: SECORPAE - Stantec Consulting Services Inc.
 Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
 QC Limits: 80 to 120 % Recovery Run ID: MA38018 Units: ug/l

Metal	Time:		15:05		15:11		21:50		21:56			
	Sample ID:	ICSA	ICSA	Results	% Rec	ICSA1	Results	% Rec	ICSA2	Results	ICSA2	% Rec
Aluminum	500000	500000	531000	106.2		518000	103.6		519000	103.8	511000	102.2
Antimony		1000	-2.2			1080	108.0	-2.9		1090	109.0	
Arsenic		1000	0.50			1020	102.0	4.7		1020	102.0	
Barium		500	-0.60			486	97.2	-0.40		481	96.2	
Beryllium		500	0.80			501	100.2	0.50		505	101.0	
Bismuth		500	10.8			525	105.0	11.2		533	106.6	
Boron			-2.7			-5.5		-3.1		-3.4		
Cadmium		1000	2.5			1030	103.0	1.8		1040	104.0	
Calcium	400000	400000	388000	97.0		377000	94.3		391000	97.8	382000	95.5
Chromium		500	1.8			481	96.2	1.7		487	97.4	
Cobalt		500	4.4			495	99.0	5.1		503	100.6	
Copper		500	3.0			528	105.6	3.8		542	108.4	
Iron	200000	200000	183000	91.5		180000	90.0		176000	88.0	175000	87.5
Lead		1000	1.1			958	95.8	2.3		1000	100.0	
Lithium		500	-8.0			480	96.0	-8.4		498	99.6	
Magnesium	500000	500000	513000	102.6		503000	100.6		510000	102.0	504000	100.8
Manganese		500	-0.40			482	96.4	-3.6		474	94.8	
Molybdenum		500	-3.0			483	96.6	-2.6		468	93.6	
Nickel		1000	1.3			957	95.7	1.6		985	98.5	
Palladium		500	-4.6			543	108.6	-0.50		562	112.4	
Potassium			37.7			22.9		8.3		37.2		
Selenium		1000	4.9			1010	101.0	2.1		1020	102.0	
Silicon			-0.50			-7.0		1.9		-0.30		
Silver		1000	9.3			1060	106.0	2.4		1090	109.0	
Sodium			-20			-30		-48		-52		
Sulfur		500	-8.5			479	95.8	2.5		515	103.0	
Strontium			5.9			5.5		5.1		4.9		
Thallium		1000	-3.1			958	95.8	-2.0		989	98.9	
Tin			-6.5			-6.0		-2.8		-6.3		
Titanium			0.10			0.0		-0.20		0.40		
Tungsten		500	9.9			496	99.2	9.7		502	100.4	
Vanadium		500	5.1			485	97.0	9.5		478	95.6	
Zinc		1000	-1.8			929	92.9	-1.3		867	86.7	

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA38018 Units: ug/l

Time:	15:05	15:11	21:50	21:56	
Sample ID:	ICSA	ICSA1	ICSA2	ICSAB2	
Metal	True	Results % Rec	Results % Rec	Results % Rec	
Zirconium	500	13.8	491 98.2	11.4	505 101.0

(*) Outside of QC limits
(anr) Analyte not requested

10.1.6
10

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA38018 Units: ug/l

Metal	Time:		04:50		04:56		
	Sample ID:	ICSA	ICSA	Results	% Rec	ICSA3	Results
Aluminum	500000	500000	512000	102.4		503000	100.6
Antimony		1000	-1.6			1090	109.0
Arsenic		1000	1.8			1080	108.0
Barium		500	-0.40			468	93.6
Beryllium		500	0.60			524	104.8
Bismuth		500	13.3			526	105.2
Boron			-1.2			-2.0	
Cadmium		1000	1.3			1040	104.0
Calcium	400000	400000	416000	104.0		405000	101.3
Chromium		500	2.2			536	107.2
Cobalt		500	3.2			533	106.6
Copper		500	4.1			535	107.0
Iron	200000	200000	181000	90.5		180000	90.0
Lead		1000	0.70			1040	104.0
Lithium		500	-9.5			457	91.4
Magnesium	500000	500000	537000	107.4		529000	105.8
Manganese		500	-6.4			517	103.4
Molybdenum		500	-2.6			475	95.0
Nickel		1000	1.5			1060	106.0
Palladium		500	-0.70			533	106.6
Potassium			18.3			33.7	
Selenium		1000	7.9			1070	107.0
Silicon			5.3			0.90	
Silver		1000	-4.8			1110	111.0
Sodium			-67			-70	
Sulfur		500	12.4			558	111.6
Strontium			3.2			3.1	
Thallium		1000	0.80			1010	101.0
Tin			-6.7			-4.4	
Titanium			-0.10			0.0	
Tungsten		500	8.4			518	103.6
Vanadium		500	11.8			514	102.8
Zinc		1000	-0.50			952	95.2

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC111015M1.ICP Date Analyzed: 11/10/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA38018 Units: ug/l

Time:	04:50		04:56	
Sample ID:	ICSA	ICSB	ICSA3	ICSB3
Metal	True	True	Results	% Rec
Zirconium	500	11.5	520	104.0

(*) Outside of QC limits
(anr) Analyte not requested

10.1.6
10

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90213
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

11/10/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	3.2		
Antimony	2.0	.099	.31		
Arsenic	2.0	.11	.13		
Barium	20	.023	.053		
Beryllium	0.20	.02	.041		
Bismuth	2.0	.079	.37		
Boron	9.9	.089	.42		
Cadmium	0.50	.023	.05		
Calcium	500	2.1	2.7		
Chromium	0.99	.05	.098		
Cobalt	5.0	.03	.04	0.020	<5.0
Copper	2.5	.064	.14		
Iron	50	.53	3.3		
Lead	2.0	.09	.24	-0.030	<2.0
Lithium	2.0	.13	.33		
Magnesium	500	2.8	8.9		
Manganese	1.5	.018	.036		
Molybdenum	2.0	.027	.15		
Nickel	4.0	.041	.095	0.060	<4.0
Palladium	5.0	.18	.36		
Potassium	990	4.8	7.3		
Selenium	2.0	.23	.25		
Silicon	20	.37	1.7		
Silver	0.50	.048	.18		
Sodium	990	1.3	1.5		
Strontium	0.99	.018	.034		
Sulfur	5.0	.32	.69		
Thallium	0.99	.15	.19		
Tin	5.0	.095	1.1		
Titanium	0.99	.054	.21		
Tungsten	5.0	.13	.43		
Vanadium	5.0	.043	.074	0.030	<5.0
Zinc	5.0	.23	.76	0.32	<5.0

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JC7897
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90213
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

11/10/15

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.037	.11		

Associated samples MP90213: JC7897-1, JC7897-2, JC7897-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

10.2.1
10

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PAQC Batch ID: MP90213
Matrix Type: SOLIDMethods: SW846 6010C
Units: mg/kg

Prep Date: 11/16/15

Metal	JC8072-16 Original MS	Spikelot MPSPK1	% Rec	QC Limits	
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt	3.3	924	971	94.8	75-125
Copper	anr				
Iron					
Lead	69.3	989	971	94.7	75-125
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	12.5	941	971	95.6	75-125
Palladium					
Potassium					
Selenium	anr				
Silicon					
Silver	anr				
Sodium					
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	40.9	950	971	93.6	75-125
Zinc	42.0	939	971	92.4	75-125

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90213
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

11/16/15

Metal	JC8072-16 Original MS	Spikelot MPSPK1	% Rec	QC Limits
-------	--------------------------	--------------------	-------	--------------

Zirconium

Associated samples MP90213: JC7897-1, JC7897-2, JC7897-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PAQC Batch ID: MP90213
Matrix Type: SOLIDMethods: SW846 6010C
Units: mg/kg

Prep Date:

11/16/15

Metal	JC8072-16 Original MSD	Spikelot MPSPK1	MSD % Rec	MSD RPD	QC Limit
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt	3.3	929	971	95.3	0.5
Copper	anr				
Iron					
Lead	69.3	998	971	95.7	0.9
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	12.5	947	971	96.3	0.6
Palladium					
Potassium					
Selenium	anr				
Silicon					
Silver	anr				
Sodium					
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	40.9	949	971	93.5	0.1
Zinc	42.0	941	971	92.6	0.2

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90213
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

11/16/15

Metal	JC8072-16 Original MSD	Spikelot MPSPK1	MSD % Rec	RPD	QC Limit
-------	---------------------------	--------------------	--------------	-----	-------------

Zirconium

Associated samples MP90213: JC7897-1, JC7897-2, JC7897-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

10.2.2
10

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC7897
 Account: SECORPAE - Stantec Consulting Services Inc.
 Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90213
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date:

11/10/15

Metal	BSP Result	Spikelot MPSPK1	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	188	200	94.0	80-120
Copper	anr			
Iron				
Lead	191	200	95.5	80-120
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	190	200	95.0	80-120
Palladium				
Potassium				
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	188	200	94.0	80-120
Zinc	189	200	94.5	80-120

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90213
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

11/10/15

Metal	BSP Result	Spikelot MPSPK1	QC % Rec	QC Limits
-------	---------------	--------------------	-------------	--------------

Zirconium

Associated samples MP90213: JC7897-1, JC7897-2, JC7897-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

10.2.3

10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PAQC Batch ID: MP90213
Matrix Type: SOLIDMethods: SW846 6010C
Units: ug/l

Prep Date:

11/16/15

Metal	JC8072-16 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	7.00	8.00	14.3 (a)	0-10
Copper	anr			
Iron				
Lead	146	144	1.2	0-10
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	26.3	28.9	9.9	0-10
Palladium				
Potassium				
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	85.9	89.8	4.5	0-10
Zinc	88.2	94.1	6.7	0-10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JC7897

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90213
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

11/16/15

Metal	JC8072-16	Original	SDL 1:5	%DIF	QC	Limits
-------	-----------	----------	---------	------	----	--------

Zirconium

Associated samples MP90213: JC7897-1, JC7897-2, JC7897-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

10.2.4
10



General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Page 1 of 1

Job Number: JC7897

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample: JC7897-1 Analyzed: 09-NOV-15 by KP
ClientID: MH523-11-5.0-20151105

Method: SM2540 G-97

Wet Weight (Total)	23.47	g
Tare Weight	18.02	g
Dry Weight (Total)	22.44	g
Solids, Percent	81.1	%

Sample: JC7897-2 Analyzed: 09-NOV-15 by KP
ClientID: MH523-12-5.0-20151105

Method: SM2540 G-97

Wet Weight (Total)	26.93	g
Tare Weight	19.88	g
Dry Weight (Total)	25.89	g
Solids, Percent	85.2	%

Sample: JC7897-3 Analyzed: 09-NOV-15 by KP
ClientID: MH523-13-5.0-20151105

Method: SM2540 G-97

Wet Weight (Total)	25.44	g
Tare Weight	17.85	g
Dry Weight (Total)	23.96	g
Solids, Percent	80.5	%



Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



CHAIN OF CUSTODY

NE
Page 1 of 1

2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

Client / Reporting Information		Project Information																				
Company Name: Accutest Laboratories		Project Name: Marcus Hook Industrial Complex																				
Street Address 2235 Route 130		Street		Billing Information (if different from Report to)																		
City Dayton	State NJ	Zip 08810	City	State	Company Name																	
Project Contact MarieM		E-mail MarieM@accutest.com		Project #		Street Address																
Phone # 732-329-0200		Fax #		Client Purchase Order #		City		State		Zip												
Sampler(s) Name(s) JD		Phone		Project Manager		Attention:																
Accutest Sample #		Field ID / Point of Collection		MEOH/HDI Vial #		Collection		Sampled by	Matrix	# of bottles	Number of preserved bottles										V8011EP	LAB USE ONLY
											I	H	HC	C3	F3C4	None	Di Water	MECH	ENCORE	None		
1	MH523-11-5.0-20151105				11/5/15		8:35:00 AM	JD	SO	1			1					X	Sub			
2	MH523-12-5.0-20151105				11/5/15		8:45:00 AM	JD	SO	1			1					X	Sub			
3	MH523-13-5.0-20151105				11/5/15		9:05:00 AM	JD	SO	1			1					X	Sub			
Turnaround Time (Business days)		Approved By (Accutest PM): / Date:		Data Deliverable Information										Comments / Special Instructions								
<input type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input checked="" type="checkbox"/> other Due 11/19/2015 <small>Emergency & Rush T/A data available VIA Lablink</small>				<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C"										<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input checked="" type="checkbox"/> Other REDT2								
														<small>Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw data</small>								
Relinquished by Sampler: B. Glassman		Date To: 11/9/15 17:00	Received By: FedEx	Relinquished By: 2		Date Time: 11-11-15 17:00		Received By: 3	Relinquished By: 4		Date Time: 11-11-15 17:00		Received By: 5	Custody Seal # 287		<input type="checkbox"/> Intact <input type="checkbox"/> Not intact	Preserved where applicable	On Ice 3,5	Cooler Temp.			
Relinquished by Sampler: FEDX		Date To: 11/11/15	Received By: 2	Relinquished By: 3		Date Time: 11-11-15 17:00		Received By: 4	Relinquished By: 5		Date Time: 11-11-15 17:00		Received By: 6	Custody Seal # 287		<input type="checkbox"/> Intact <input type="checkbox"/> Not intact	Preserved where applicable	On Ice 3,5	Cooler Temp.			
Relinquished by: 3		Date Time: 11-11-15 17:00	Received By: 4	Relinquished By: 5		Date Time: 11-11-15 17:00		Received By: 6	Relinquished By: 7		Date Time: 11-11-15 17:00		Received By: 8	Custody Seal # 287		<input type="checkbox"/> Intact <input type="checkbox"/> Not intact	Preserved where applicable	On Ice 3,5	Cooler Temp.			
Relinquished by: 5		Date Time: 11-11-15 17:00	Received By: 6	Relinquished By: 7		Date Time: 11-11-15 17:00		Received By: 8	Relinquished By: 9		Date Time: 11-11-15 17:00		Received By: 10	Custody Seal # 287		<input type="checkbox"/> Intact <input type="checkbox"/> Not intact	Preserved where applicable	On Ice 3,5	Cooler Temp.			

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JC7897: Chain of Custody

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Accutest Labs of New England, Inc.



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JC7897 Client: ACNJ Project: _____
Date / Time Received: 11/11/2015 9:20:00 AM Delivery Method: _____ Airbill #'s: _____
Cooler Temps (Initial/Adjusted): #1: (3.3/5): _____

Cooler Security Y or N Y or N
1. Custody Seals Present: 3. COC Present:
2. Custody Seals Intact: 4. Smpl Dates/Time OK

Cooler Temperature Y or N
1. Temp criteria achieved:
2. Thermometer ID: IRGUN1;
3. Cooler media: Ice (Bag)
4. No. Coolers: 1

Quality Control Preservation Y or N N/A
1. Trip Blank present / cooler:
2. Trip Blank listed on COC:
3. Samples preserved properly:
4. VOCs headspace free:

Sample Integrity - Documentation Y or N
1. Sample labels present on bottles:
2. Container labeling complete:
3. Sample container label / COC agree:
Sample Integrity - Condition Y or N
1. Sample recvd within HT:
2. All containers accounted for:
3. Condition of sample: Intact
Sample Integrity - Instructions Y or N N/A
1. Analysis requested is clear:
2. Bottles received for unspecified tests:
3. Sufficient volume recvd for analysis:
4. Compositing instructions clear:
5. Filtering instructions clear:

Comments

Accutest Laboratories
V:(508) 481-6200

495 Technology Center West, Bldg One
F: (508) 481-7753

Marlborough, MA 01752
www.accutest.com

12.1
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JC7897: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

Accutest New Jersey

Job No: JC7897

SECORPAE: Marcus Hook Industrial Complex
Project No: MHIC 523 Tank

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JC7897-1	Collected: 05-NOV-15 08:35 By: JD MH523-11-5.0-20151105			Received: 05-NOV-15	By: BA	
JC7897-1	SW846 8011	13-NOV-15 23:56	NK	13-NOV-15 AC	V8011EDB	
JC7897-2	Collected: 05-NOV-15 08:45 By: JD MH523-12-5.0-20151105			Received: 05-NOV-15	By: BA	
JC7897-2	SW846 8011	14-NOV-15 00:24	NK	13-NOV-15 AC	V8011EDB	
JC7897-3	Collected: 05-NOV-15 09:05 By: JD MH523-13-5.0-20151105			Received: 05-NOV-15	By: BA	
JC7897-3	SW846 8011	14-NOV-15 00:52	NK	13-NOV-15 AC	V8011EDB	

Accutest Internal Chain of Custody

Page 1 of 1

Job Number: JC7897
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex
Received: 11/05/15

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7897-1.1	Walk In Ref #5	Aysia Wood	11/13/15 08:39	Retrieve from Storage
JC7897-1.1	Aysia Wood	Walk In Ref #5	11/16/15 10:29	Return to Storage
JC7897-2.1	Walk In Ref #5	Aysia Wood	11/13/15 08:39	Retrieve from Storage
JC7897-2.1	Aysia Wood	Walk In Ref #5	11/16/15 10:29	Return to Storage
JC7897-3.1	Walk In Ref #5	Aysia Wood	11/13/15 08:39	Retrieve from Storage
JC7897-3.1	Aysia Wood	Walk In Ref #5	11/16/15 10:29	Return to Storage



GC Volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JC7897

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Marcus Hook Industrial Complex

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45402-MB	BB65159.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513

The QC reported here applies to the following samples:

Method: SW846 8011

JC7897-1, JC7897-2, JC7897-3

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	2.5	0.41	ug/kg	

CAS No.	Surrogate Recoveries	Limits
460-00-4	Bromofluorobenzene (S)	84%
460-00-4	Bromofluorobenzene (S)	88%

Blank Spike Summary

Page 1 of 1

Job Number: JC7897

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Marcus Hook Industrial Complex

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45402-BS	BB65160.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513

The QC reported here applies to the following samples:

Method: SW846 8011

JC7897-1, JC7897-2, JC7897-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
106-93-4	1,2-Dibromoethane	32.4	29.9	92	59-133

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	90%	70-170%
460-00-4	Bromofluorobenzene (S)	86%	70-170%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JC7897

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Marcus Hook Industrial Complex

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45402-MS	BB65161.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513
OP45402-MSD	BB65162.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513
JC7895-1	BB65163.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513

The QC reported here applies to the following samples:

Method: SW846 8011

JC7897-1, JC7897-2, JC7897-3

CAS No.	Compound	JC7895-1		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
106-93-4	1,2-Dibromoethane	ND		38.6	36.9	98	38.4	46.2	120	22	74-147/30
Surrogate Recoveries											
460-00-4	Bromofluorobenzene (S)	120%		119%	143%	70-170%					
460-00-4	Bromofluorobenzene (S)	113%		107%	117%	70-170%					

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JC7897

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Marcus Hook Industrial Complex

Method: SW846 8011

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a	S1 ^b
JC7897-1	BB65165.D	133	119
JC7897-2	BB65166.D	129	112
JC7897-3	BB65167.D	125	103
OP45402-BS	BB65160.D	90	86
OP45402-MB	BB65159.D	84	88
OP45402-MS	BB65161.D	120	113
OP45402-MSD	BB65162.D	119	107

Surrogate
Compounds

Recovery
Limits

S1 = Bromofluorobenzene (S)

70-170%

- (a) Recovery from GC signal #2
- (b) Recovery from GC signal #1

13.4.1

13

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JC7897

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Marcus Hook Industrial Complex

Check Std:	GBB3513-ICC3513	Injection Date:	11/13/15
Lab File ID:	BB65156.D	Injection Time:	19:42
Instrument ID:	GCBB	Method:	SW846 8011

S1 ^a
RT S1 ^b
RT

Check Std	6.62	6.16
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP45402-MB	BB65159.D	11/13/15	21:06	6.61	6.15
OP45402-BS	BB65160.D	11/13/15	21:34	6.61	6.15
OP45402-MS	BB65161.D	11/13/15	22:02	6.61	6.14
OP45402-MSD	BB65162.D	11/13/15	22:31	6.61	6.14
JC7895-1	BB65163.D	11/13/15	22:59	6.61	6.14
ZZZZZZ	BB65164.D	11/13/15	23:27	6.62	6.15
JC7897-1	BB65165.D	11/13/15	23:56	6.62	6.16
JC7897-2	BB65166.D	11/14/15	00:24	6.63	6.16
JC7897-3	BB65167.D	11/14/15	00:52	6.63	6.16
GBB3513-ECC351	BB65168.D	11/14/15	01:20	6.64	6.17

Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

13.5.1
13

Initial Calibration Summary

Page 1 of 1

Job Number: JC7897

Sample: GBB3513-ICC3513

Account: ALNJ Accutest New Jersey

Lab FileID: BB65156.D

Project: SECORPAE: Marcus Hook Industrial Complex

Response Factor Report GCBB

Method : C:\msdchem\1\METHODS\EDS151113.M (ChemStation Integrator)

Title : v8011edb soil

Last Update : Mon Nov 16 08:26:53 2015

Response via : Initial Calibration

Calibration Files

1	=BB65157.d	2	=BB65156.d	3	=BB65155.d	4	=BB65154.d
5	=BB65153.d	6	=BB65152.d				

	Compound	1	2	3	4	5	6	Avg	%RSD
<hr/>									
1)	1,2-Dibromoethane	1.203	1.166	1.184	1.215	1.287	1.464	1.253 E6	8.89
2)	s 4-Bromofluorobenzen	5.271	5.697	5.802	6.269	7.122	9.129	6.548 E4	21.58
----- Quadratic regression -----									
Coefficient = 0.9998									
Response Ratio = 162485.97174 + 56903.65984 *A + -24.26756 *A^2									
3)	1,2-Dibromo-3-chlor	1.923	1.881	1.709	1.689	1.553	1.687	1.740 E6	7.92

Signal #2

1)	1,2-Dibromoethane	8.126	7.678	7.839	7.489	7.085	6.992	7.535 E6	5.82
2)	s 4-Bromofluorobenzen	5.934	5.977	5.527	5.329	5.413	5.226	5.568 E5	5.68
3)	1,2-Dibromo-3-chlor	1.689	1.706	1.603	1.643	1.545	1.775	1.660 E7	4.89

(#) = Out of Range

EDS151113.M

Mon Nov 16 08:27:54 2015

Initial Calibration Verification

Job Number: JC7897

Sample: GBB3513-ICV3513

Account: ALNJ Accutest New Jersey

Lab FileID: BB65158.D

Project: SECORPAE: Marcus Hook Industrial Complex

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BB...13\BB65158.d\ECD1B.CH Vial: 97
 Signal #2 : C:\msdchem\1\DATA\BB151113\BB65158.d\ECD2A.CH
 Acq On : 13-Nov-15, 20:38:41 Operator: nickkk
 Sample : icv3513-20,edb Inst : GCB
 Misc : op45402,gbb3512,30,,,50,,s Multiplr: 1.00
 IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS151113.M (ChemStation Integrator)
 Title : v8011edb soil
 Last Update : Mon Nov 16 08:26:53 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	1.253	1.190 E6	5.0	102	0.00	3.18-	3.24
----- True Calc. % Drift -----								
2 s	4-Bromofluorobenzene	100.000	102.217	-2.2	101	0.00	6.13-	6.19
----- AvgRF CCRF % Dev -----								
3	1,2-Dibromo-3-chloropr	1.740	1.832 E6	-5.3	97	0.00	10.12-	10.18

***** Signal #2 *****								
1	1,2-Dibromoethane	7.535	7.990 E6	-6.0	104	0.00	3.80-	3.86
2 s	4-Bromofluorobenzene	556.770	598.111 E3	-7.4	100	0.00	6.59-	6.65
3	1,2-Dibromo-3-chloropr	16.600	16.674 E6	-0.4	98	0.00	11.17-	11.23

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 BB65156.d EDS151113.M Mon Nov 16 08:27:48 2015

13.6.2

13

Continuing Calibration Summary

Job Number: JC7897

Sample: GBB3513-ECC3513

Account: ALNJ Accutest New Jersey

Lab FileID: BB65168.D

Project: SECORPAE: Marcus Hook Industrial Complex

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BB...13\BB65168.d\ECD1B.CH Vial: 95
 Signal #2 : C:\msdchem\1\DATA\BB151113\BB65168.d\ECD2A.CH
 Acq On : 14-Nov-15, 01:20:16 Operator: nickkk
 Sample : ecc3513-20,edb Inst : GCB
 Misc : op45402,gbb3512,30,,,50,,s Multiplr: 1.00
 IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS151113.M (ChemStation Integrator)
 Title : v8011edb soil
 Last Update : Mon Nov 16 08:26:53 2015
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	1.253	1.041 E6	16.9#	89	0.01	3.19-	3.25
2 s	4-Bromofluorobenzene	100.000	92.279	7.7	91	0.01	6.14-	6.20
3	1,2-Dibromo-3-chloropr	1.740	1.786 E6	-2.6	95	0.00	10.13-	10.19
***** Signal #2 *****								
1	1,2-Dibromoethane	7.535	8.309 E6	-10.3	108	0.01	3.82-	3.88
2 s	4-Bromofluorobenzene	556.770	593.871 E3	-6.7	99	0.01	6.61-	6.67
3	1,2-Dibromo-3-chloropr	16.600	18.975 E6	-14.3	111	0.00	11.18-	11.24

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 BB65156.d EDS151113.M Mon Nov 16 08:29:33 2015



GC Volatiles

Raw Data

(Accutest Labs of New England, Inc.)

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151113\
 Data File : BB65165.d
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
 Acq On : 13-Nov-15, 23:56:03
 Operator : nickk
 Sample : jc7897-1,op45402
 Misc : op45402,gbb3513,30.87,,,50,,s
 ALS Vial : 17 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: Nov 16 08:32:20 2015
 Quant Method : C:\msdchem\1\METHODS\EDS151113.M
 Quant Title : v8011edb soil
 QLast Update : Mon Nov 16 08:26:53 2015
 Response via : Initial Calibration
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds
 2) s 4-Bromofl... 6.157 6.625 3471211 37015138 59.664 66.482
 Spiked Amount 50.000 Range 60 - 140 Recovery = 119.33% 132.96%

Target Compounds
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

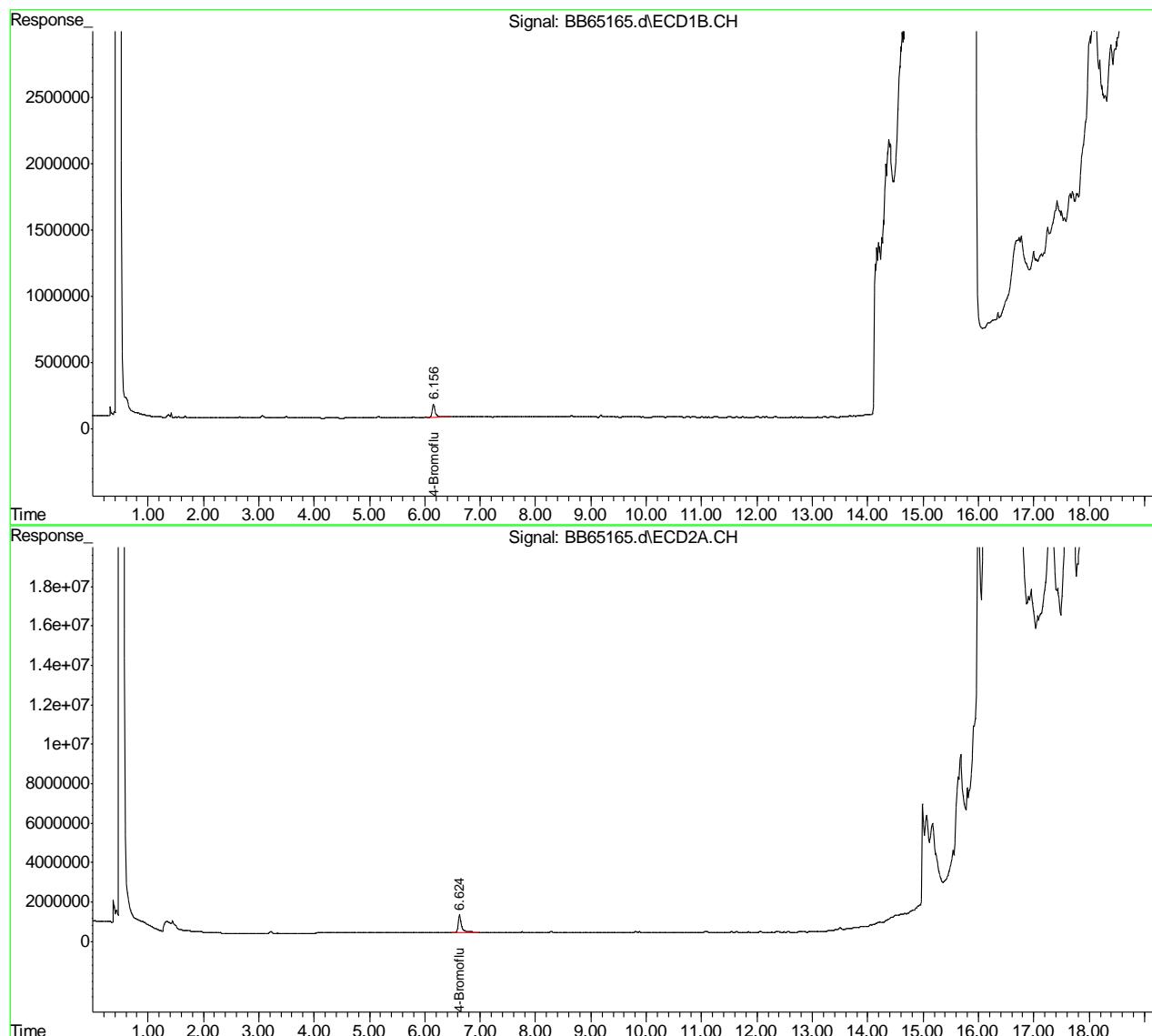
14.1.1
14

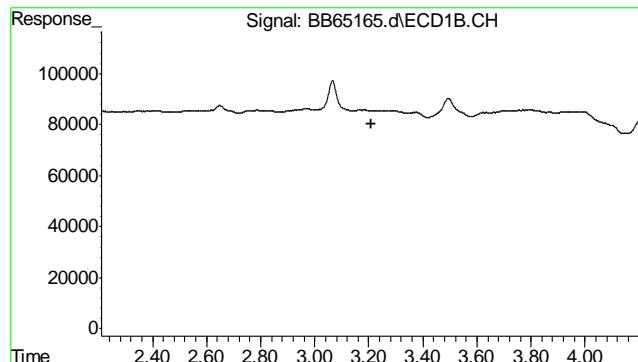
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151113\
 Data File : BB65165.d
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
 Acq On : 13-Nov-15, 23:56:03
 Operator : nickk
 Sample : jc7897-1,op45402
 Misc : op45402,gbb3513,30.87,,,50,,s
 ALS Vial : 17 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

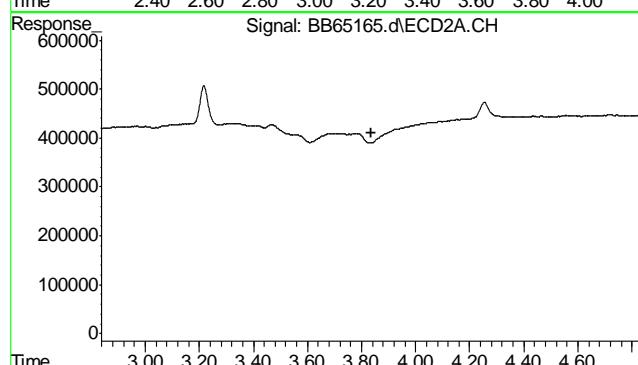
Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: Nov 16 08:32:20 2015
 Quant Method : C:\msdchem\1\METHODS\EDS151113.M
 Quant Title : v8011edb soil
 QLast Update : Mon Nov 16 08:26:53 2015
 Response via : Initial Calibration
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

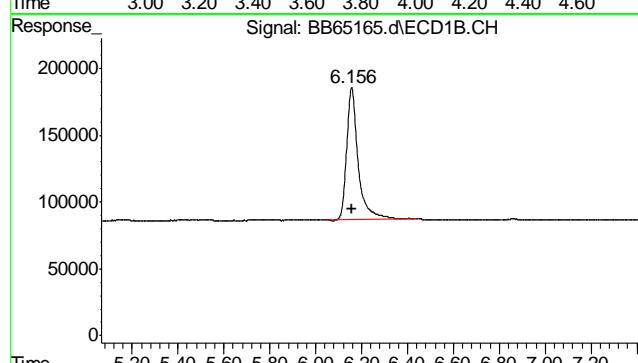




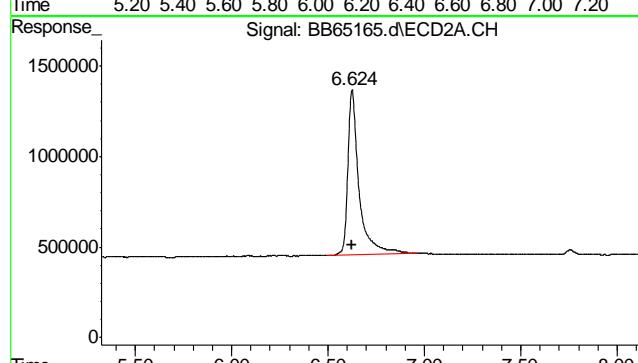
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 3.210 min
Response: 0
Conc: N.D.



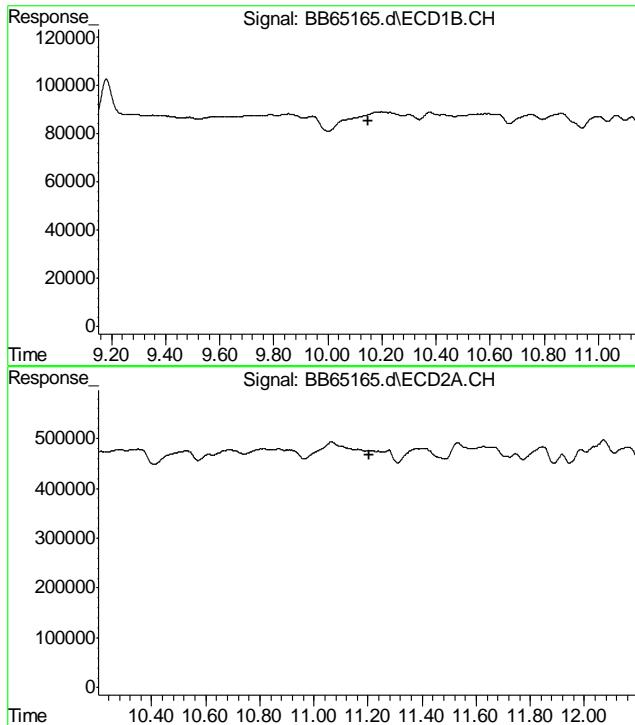
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 3.837 min
Response: 0
Conc: N.D.



#2 4-Bromofluorobenzene
R.T.: 6.157 min
Delta R.T.: 0.000 min
Response: 3471211
Conc: 59.66 ug/L

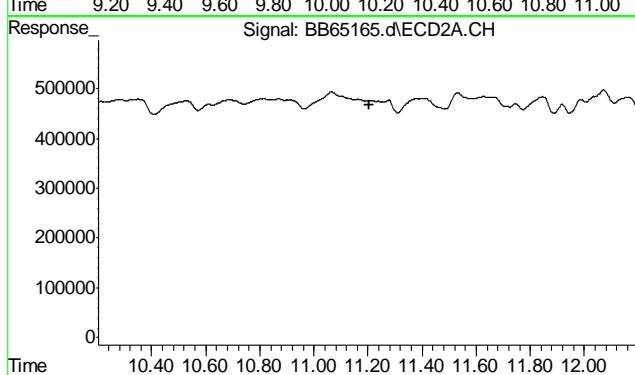


#2 4-Bromofluorobenzene
R.T.: 6.625 min
Delta R.T.: 0.002 min
Response: 37015138
Conc: 66.48 ug/L



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 10.150 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 11.203 min
Response: 0
Conc: N.D.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151113\
 Data File : BB65166.d
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
 Acq On : 14-Nov-15, 00:24:06
 Operator : nickk
 Sample : jc7897-2,op45402
 Misc : op45402,gbb3513,30.28,,,50,,s
 ALS Vial : 18 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: Nov 16 08:32:34 2015
 Quant Method : C:\msdchem\1\METHODS\EDS151113.M
 Quant Title : v8011edb soil
 QLast Update : Mon Nov 16 08:26:53 2015
 Response via : Initial Calibration
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
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System Monitoring Compounds
 2) s 4-Bromofl... 6.156 6.626 3259605 36029588 55.753 64.712
 Spiked Amount 50.000 Range 60 - 140 Recovery = 111.51% 129.42%

Target Compounds
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

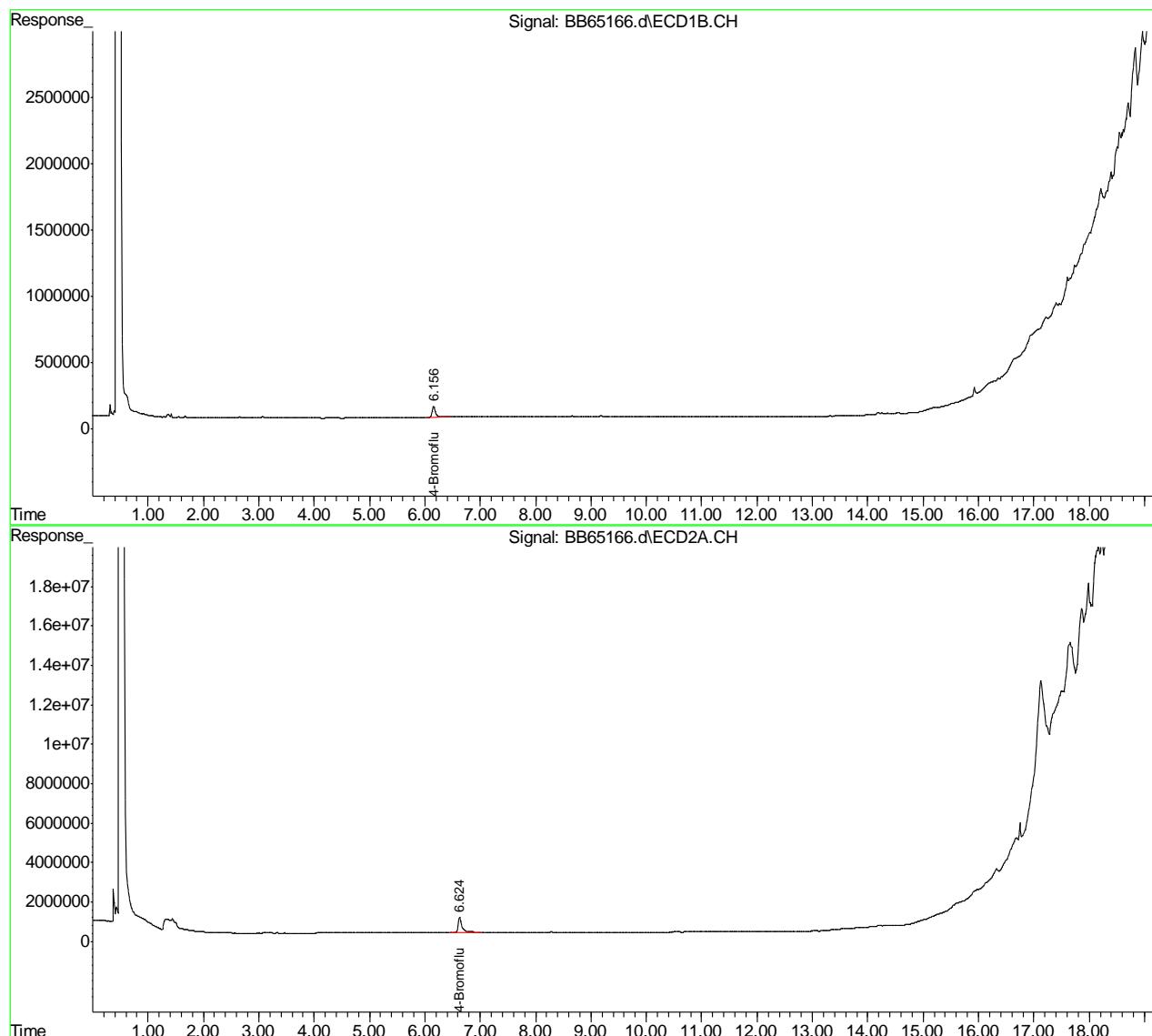
14.1.2
14

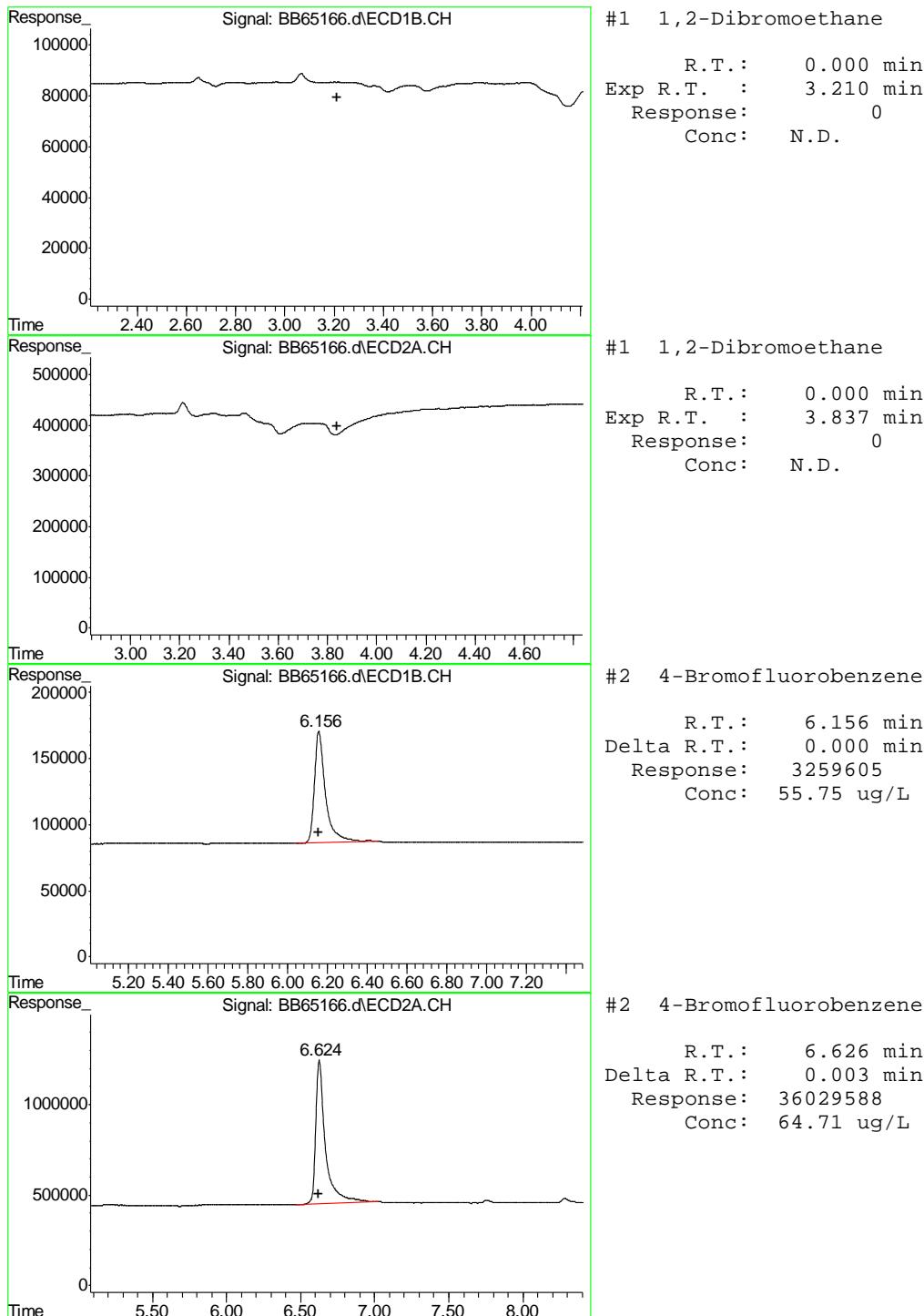
Quantitation Report (QT Reviewed)

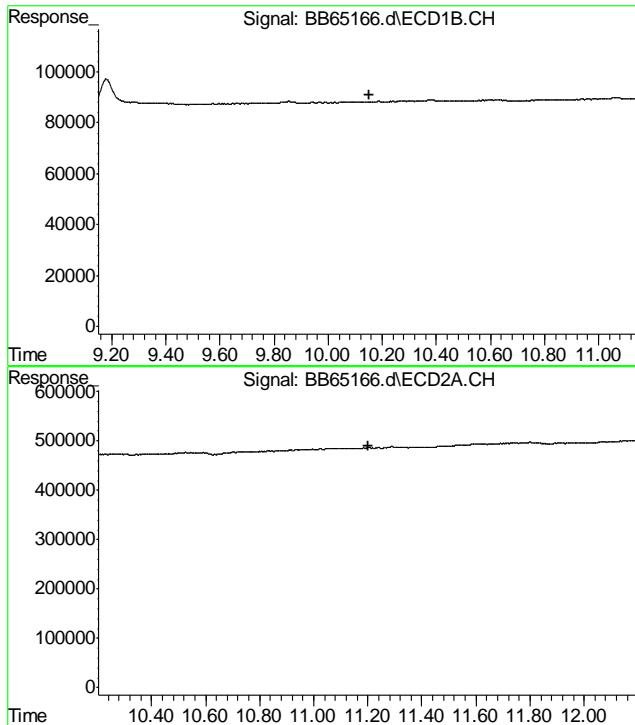
Data Path : C:\msdchem\1\DATA\BB151113\
 Data File : BB65166.d
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
 Acq On : 14-Nov-15, 00:24:06
 Operator : nickk
 Sample : jc7897-2,op45402
 Misc : op45402,gbb3513,30.28,,,50,,s
 ALS Vial : 18 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: Nov 16 08:32:34 2015
 Quant Method : C:\msdchem\1\METHODS\EDS151113.M
 Quant Title : v8011edb soil
 QLast Update : Mon Nov 16 08:26:53 2015
 Response via : Initial Calibration
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :







#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 10.150 min
Response: 0
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 11.203 min
Response: 0
Conc: N.D.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151113\
 Data File : BB65167.d
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
 Acq On : 14-Nov-15, 00:52:13
 Operator : nickk
 Sample : jc7897-3,op45402
 Misc : op45402,gbb3513,30.62,,,50,,s
 ALS Vial : 19 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: Nov 16 08:32:48 2015
 Quant Method : C:\msdchem\1\METHODS\EDS151113.M
 Quant Title : v8011edb soil
 QLast Update : Mon Nov 16 08:26:53 2015
 Response via : Initial Calibration
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
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System Monitoring Compounds
 2) s 4-Bromofl... 6.156 6.625 3025430 34689034 51.441 62.304
 Spiked Amount 50.000 Range 60 - 140 Recovery = 102.88% 124.61%

Target Compounds
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

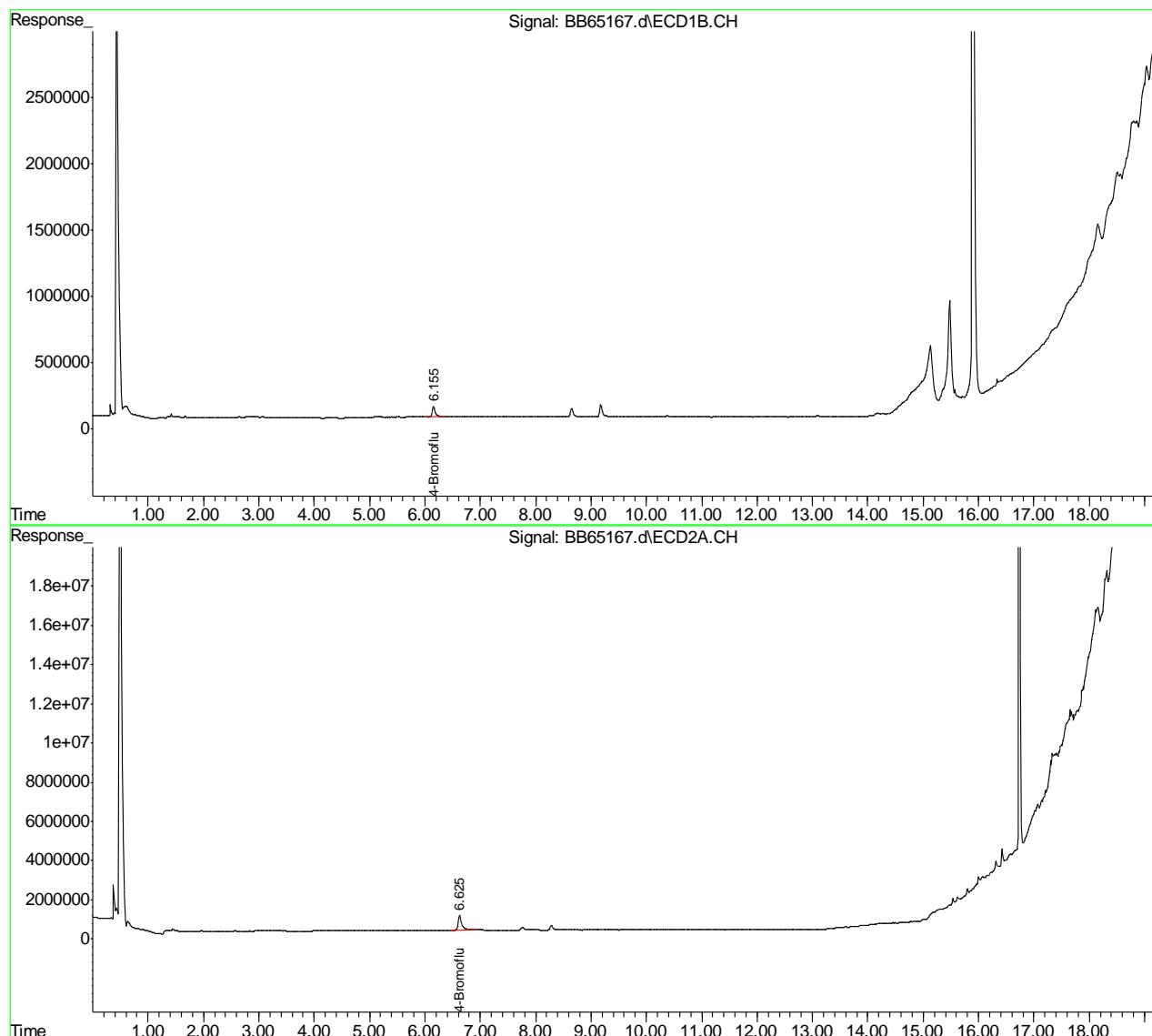
14.1.3
14

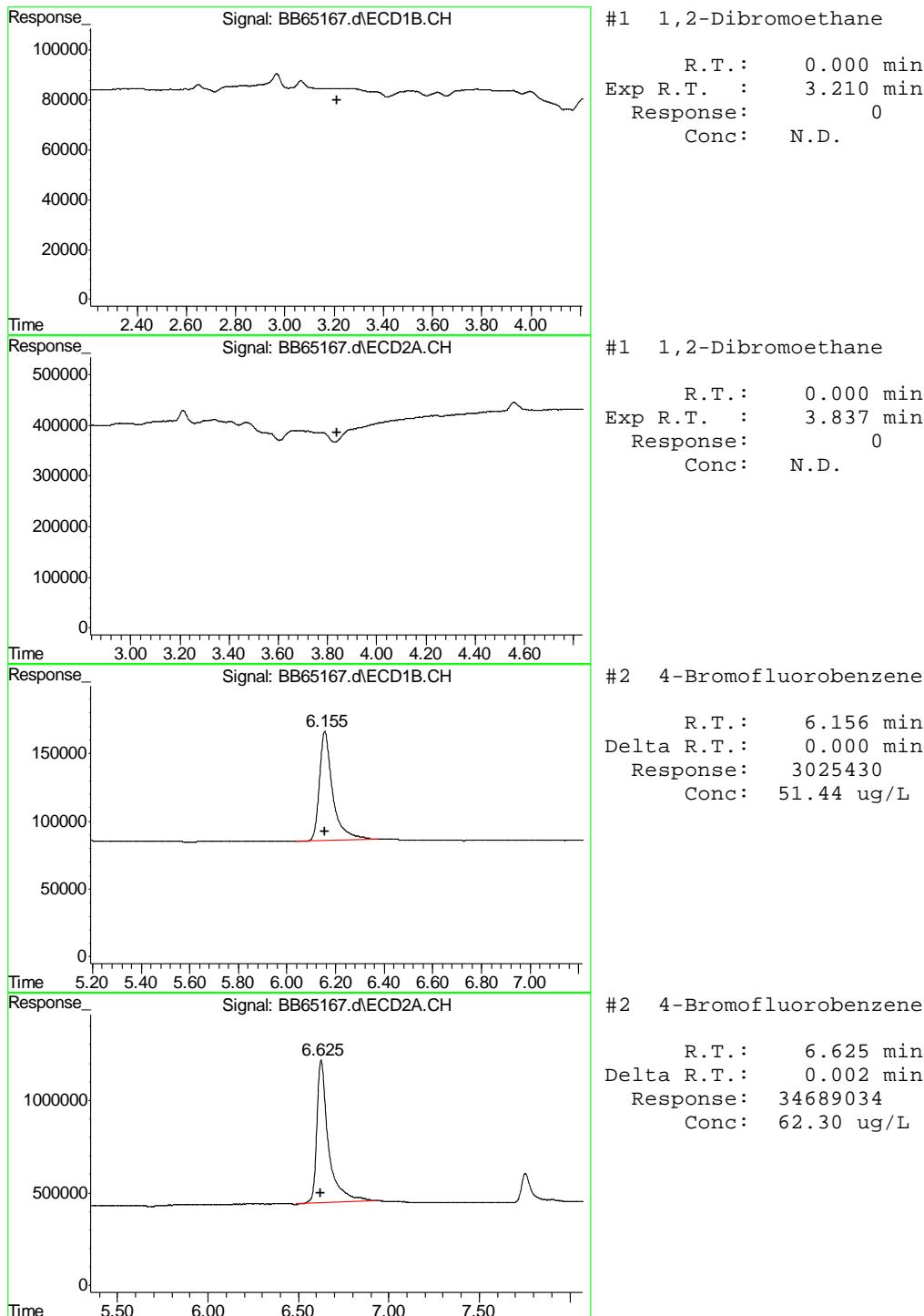
Quantitation Report (QT Reviewed)

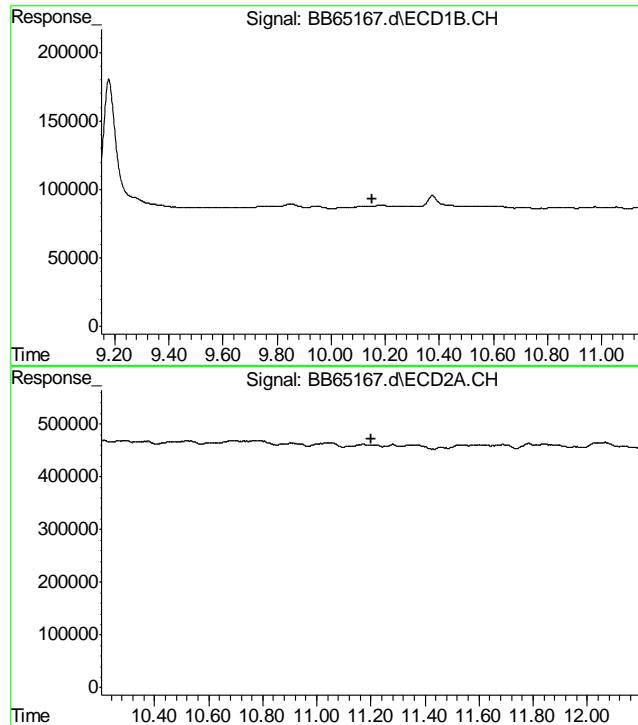
Data Path : C:\msdchem\1\DATA\BB151113\
 Data File : BB65167.d
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
 Acq On : 14-Nov-15, 00:52:13
 Operator : nickk
 Sample : jc7897-3,op45402
 Misc : op45402,gbb3513,30.62,,,50,,s
 ALS Vial : 19 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: Nov 16 08:32:48 2015
 Quant Method : C:\msdchem\1\METHODS\EDS151113.M
 Quant Title : v8011edb soil
 QLast Update : Mon Nov 16 08:26:53 2015
 Response via : Initial Calibration
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :







#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 10.150 min
Response: 0
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 11.203 min
Response: 0
Conc: N.D.

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151113\
 Data File : BB65159.d
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
 Acq On : 13-Nov-15, 21:06:31
 Operator : nickk
 Sample : op45402-mb
 Misc : op45402,gbb3513,30.33,,,50,,s
 ALS Vial : 11 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: Nov 16 08:29:56 2015
 Quant Method : C:\msdchem\1\METHODS\EDS151113.M
 Quant Title : v8011edb soil
 QLast Update : Mon Nov 16 08:26:53 2015
 Response via : Initial Calibration
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
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System Monitoring Compounds
 2) s 4-Bromofl... 6.146 6.611 2622681 23474900 44.062 42.163
 Spiked Amount 50.000 Range 60 - 140 Recovery = 88.12% 84.33%

Target Compounds
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

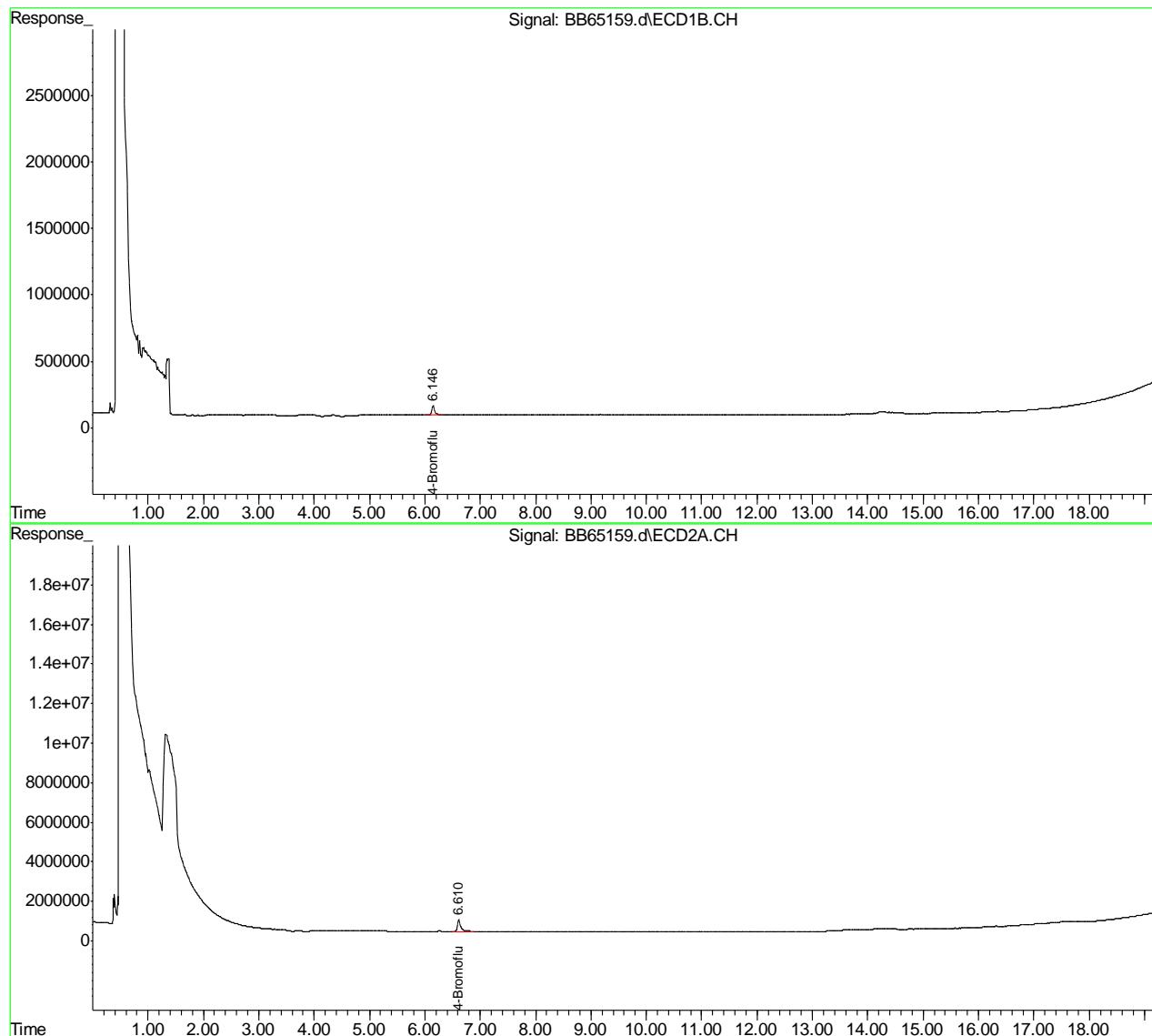
14.2.1
14

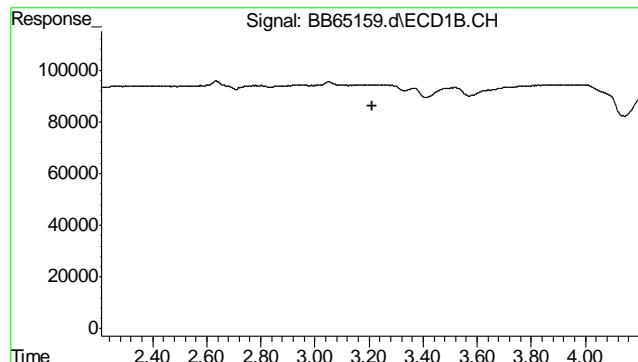
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151113\
 Data File : BB65159.d
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
 Acq On : 13-Nov-15, 21:06:31
 Operator : nickk
 Sample : op45402-mb
 Misc : op45402,gbb3513,30.33,,,50,,s
 ALS Vial : 11 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

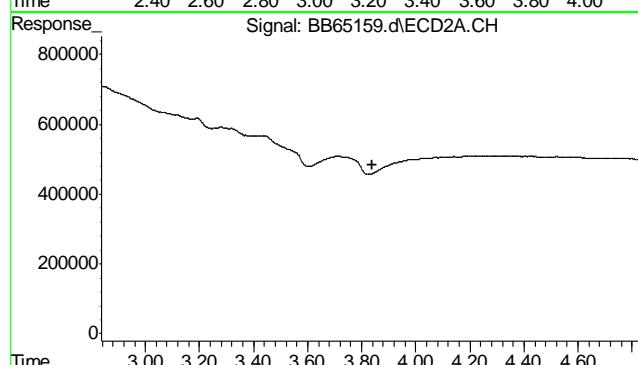
Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: Nov 16 08:29:56 2015
 Quant Method : C:\msdchem\1\METHODS\EDS151113.M
 Quant Title : v8011edb soil
 QLast Update : Mon Nov 16 08:26:53 2015
 Response via : Initial Calibration
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

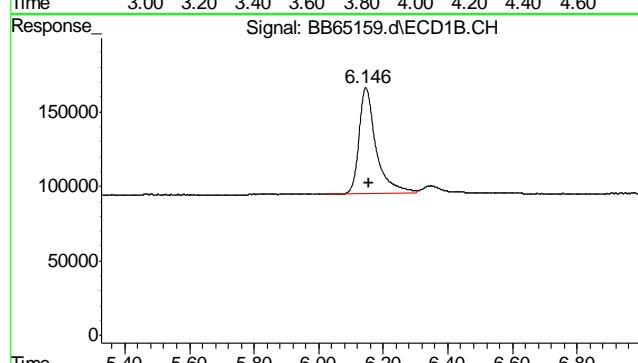




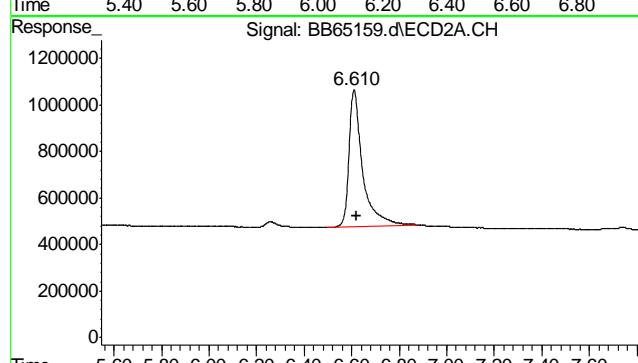
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 3.210 min
Response: 0
Conc: N.D.



#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 3.837 min
Response: 0
Conc: N.D.

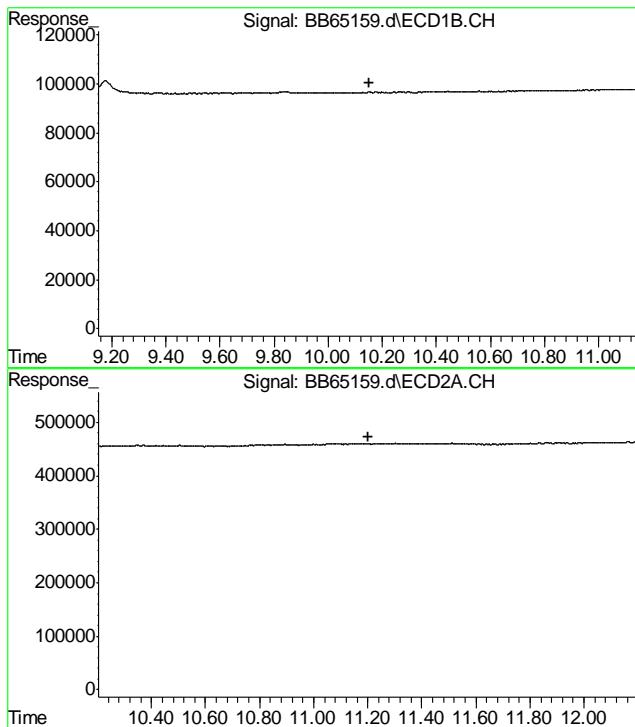


#2 4-Bromofluorobenzene
R.T.: 6.146 min
Delta R.T.: -0.010 min
Response: 2622681
Conc: 44.06 ug/L



#2 4-Bromofluorobenzene
R.T.: 6.611 min
Delta R.T.: -0.012 min
Response: 23474900
Conc: 42.16 ug/L

14.2.1
14



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 10.150 min
Response: 0
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 11.203 min
Response: 0
Conc: N.D.